

BOARDWATCH MAGAZINE

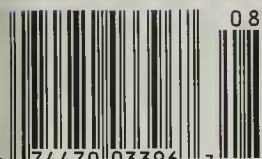
Guide to Internet Access and the World Wide Web

**INTERNET HUMMEROIDS
WIN A 1997 AM GENERAL
HUMMER AT ISPCON '97**

**INTERNET MULTICASTING
AND THE M-BONE —**

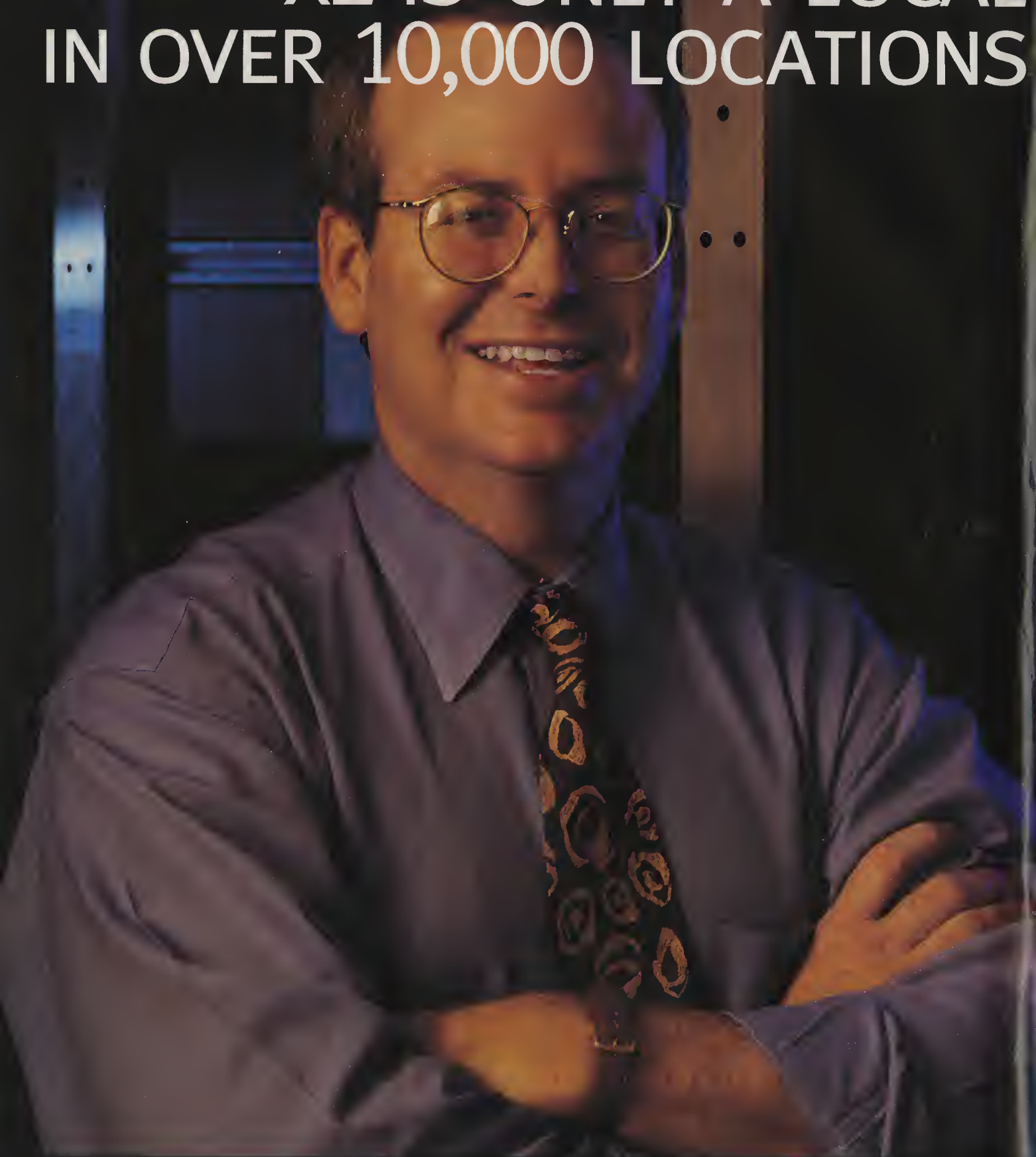
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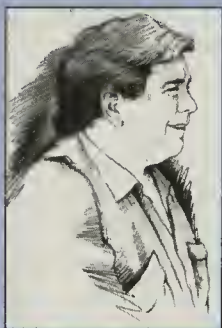


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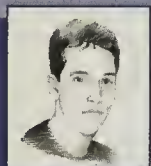
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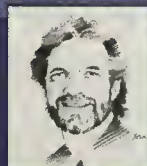
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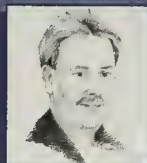
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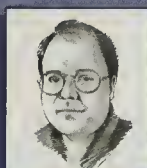
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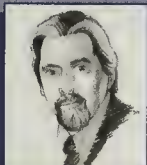
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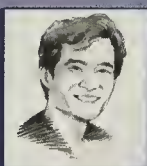
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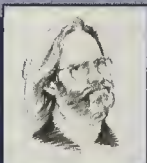
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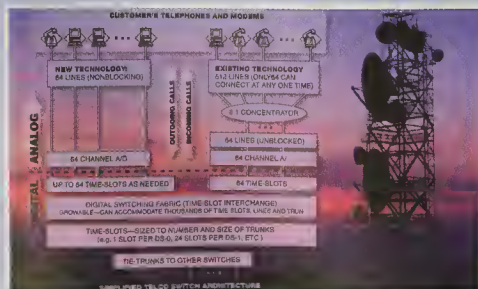
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EDITOR'S NOTES

by Jack Rickard

INTERNET HUMMEROIDS

This issue of *Boardwatch Magazine* will find us at the Internet Service Provider Convention in San Francisco, August 20-23, along with a couple or three thousand of our close friends from the Internet service provider industry.

The show has been a riot all year. We had a great event in 1996 — very focused and with a smaller group.

We had exhibitors in Moscone Center last year, and the sessions at the San Francisco Hilton. Everyone seemed to think it would have been even better had we put the educational sessions and exhibits under one roof to avoid the four-block walk between sites.

We put pencil to paper, and redesigned the show to be entirely contained within the San Francisco Hilton. We had almost exactly the same exhibit space as we sold last year, and we had good intentions of doing it in yet a more focused fashion — less wide area promotion and more targeted toward ISPs specifically. And we doubled the price of the exhibit space just to make sure.

Well, it didn't precisely work. By the end of April, all of our exhibit space was sold out. By the end of May, we had as many registered as attended last year. And San Francisco is a sufficiently desirable location that if you don't plan well ahead, like a year or so, there usually isn't any space left anywhere. They book pretty solidly. We finally opened a 7,000 square foot expansion exhibit hall and two more session rooms at Hotel Nikko across the street. That went up like smoke before we had the plans completely drawn. We found about a dozen smallish session rooms on the fourth floor of the San Francisco Union Square, and converted those to "exhibit rooms."

Although we were very clear with all exhibitors on Union Square and Hotel Nikko as to what to expect, once you have somebody onboard, the natural instinct is to try to make them well. So we started kicking ideas around as to how to steer attendees toward Union Square and Nikko without making everybody feel "steered." I hate to be steered. I'd rather be lured.

About three years ago, I had actually indeed become an official joke in my own office. I don't like to drive around much, and live just a mile or so from the office. I was driving an 84 Volkswagen Vanagon. Now this Vanagon was an entirely serviceable vehicle in all respects, and in fact I still have it, and it runs about as well as it ever did, which is to say it would wheeze a full mile and a half to the office before giving out — and most evenings I didn't have to walk home. But I did catch quite a bit of flak because I rarely spent any money outside of work, and never on cars. Bottom line — no life.

About that time, I joined a friend on a trek up into the mountains in a 4WD vehicle. We bounced around some old abandoned railroad beds that wind around in the Rockies here. Most of these little mountain railroads were shut down at the turn of the century with the collapse in silver prices, and the rails in fact were taken up for scrap during the Depression. It was the first time I had been out of the office in months, and it was a lot of fun. Great scenery, very lost, and no computers.

A few weeks later I saw a photo of Arnold Schwarzenegger with his Hummer — a military High Mobility Multi-use Wheeled Vehicle (HMMWV) tricked out for him in civilian style with a paint job, air conditioning, etc. I had actually worked on the Request For Proposal (RFP) for the TOW Missile Launch version of this vehicle at Emerson Electric in the early 80s. I recalled that the spec called for a vehicle that could transit a 30-inch concrete wall, 36 inches thick, at 35 miles an hour, with no damage to the vehicle.

Specs can be a bit optimistic at the RFP stage, and I'm not certain the HMMWV ever tested out to that one. But I do recall that some napkin calculations on the kinetics of 10,000 pounds of vehicle and payload, moving at 35 miles per hour, and striking a 30-inch concrete barrier, had me pretty much persuaded that the boys in the beltway had lost their cookies on this one.

And ridiculous is how it has struck me ever since. Now, here I was looking at a picture of this "Jeep designed by committee," Arney with that charming terminator grin, and the vehicle tricked out with electric windows, power door locks, stereo, air conditioning, lights all over it, etc. All I could think was that if Lincoln Continental ever designed a dump truck, this would be about what it would look like.

But I did go out to a local dealer and test one on their test track. They were a little hesitant to do the 35 mile an hour crash test, but they did pull it up to a two and a half foot tall concrete wall and it walked right up over it at an idle. We forded a creek with about 40 inches of water in it and none of us got wet. It did a side slope that was so steep I was sure I was going to fall out the window. It climbed straight up a hill steep enough that all I could see was blue sky through the windshield. We drove it over about ten telephone poles lying on the ground. And THEN we did the boulder field over rocks about the size of garbage cans — all pretty much at an idle. It had a turning radius of 26.5 feet — less than a Jeep. I came away convinced it could climb trees and otherwise do a great many things it wasn't going to talk me into doing with it. I also came away with a loaded 1994 hardtop wagon.

In the three years since I have learned that they are mostly a maintenance nightmare. The "Virtually Indestructable" AM

General Hummer leaves a trail of parts and fluids you can actually follow through the woods and keep from getting lost - after the fashion of Hansel and Gretel. Many of the dealerships, and certainly mine here in Denver, are at least incompetent to work on them and probably criminal. But the vehicles themselves really will climb trees. And with every geegaw I hung on it to enhance the ridiculous whimsy of the Lincoln Continental dump truck motif, including a supercharger, burled wood interior, auxiliary fuel tanks, cell phone, more stereo, GPS navigation systems, ARB airlocker differentials, additional lights, and on and on, I have grown to love it more. It is truly the most conceptually ridiculous vehicle on earth. I get a chuckle every time I look at it.

I constantly hear from Land Rover and Jeep owners about how I've made a mistake. The only thing I can say in response is that those cars sure do make an annoying "trash can lid" noise if you roll over the top of them in a Hummer. On the other hand, they are really very easy for the Hummer to winch out of the mud bogs they seem to constantly be mired in. It's gotten to be a kind of weekend hobby we call "Jeep fishing" as in "Do you want to pick up some beer and go Jeep fishing this weekend?"

The bottom line is you can't go get gas, or go to the grocery store without someone, and at times a crowd of people, gathering around to ask how much it cost, ask to see inside, etc., etc. Plan on an extra 10 minutes for a fuel stop.

What has this all got to do with ISPCON? Well, we needed a way to lure attendees into some of these outlying areas. While we were brainstorming some ideas in a staff meeting, I looked out the window at the Hummer in the parking lot, where four people were pressing noses to the glass, and made the statement, "Too bad we can't just park the Hummer there..."

And that's how things at **Boardwatch** work. The difficult is doable, and the ridiculous takes a little longer. We contacted some of the affected companies, and persuaded them to join forces in purchasing a loaded 1997 AM General Hummer. Registered attendees will receive a little treasure hunt card when they pick up their registration kits at the event. They have to visit the booths of each vendor listed on the card, and get them to stamp it with their own special little stamp. And then, they turn in the cards at the designated place. Saturday afternoon we will pull one of those cards out of the box, and hand the keys to the Hummer to the lucky winner. At a show with just a couple or three thousand registered attendees, a \$71,326 vehicle is a pretty handsome door prize. We've picked the 1997 four-passenger open top for the promotion. The traffic problem should be solved. Attendees will have the best odds they will ever have at winning a Hummer anyplace. It should up the excitement level of the show overall.

The Hummer will be on display in the Grand Ballroom exhibit floor. Bob Bish has put together a truly excellent web site at <http://www.humvee.com> that provides a lot more information on Hummers. He also maintains the Hummer Mailing List (HML) which is one of the most valuable resources available for Hummer owners. You can join the list directly at the web site. We've included some photos of Hummers here for your consideration. I may be entirely alone in referring to the people on this list as Hummeroids.



Finally, an interesting demographic note.

When I was considering this little escapade, I posted a note in the HML asking for recommendations on dealers in the San Francisco area. I received six very informative replies from Hummeroids who also expressed a desire to attend the show. I responded to each of them that it was a very focused show for some very technical people who babbled incessantly about computers and networks and the various forms of detritus surrounding same. I didn't want them to come to the show just to win a Hummer and be lost for three days in the interim.

Of course. They were all ISPs....

Jack Rickard
Editor Rotundus



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Gross Vehicle Weight	10,300 lbs
Gross Axle Weight Front	4100 lbs
Gross Axle Weight Rear	6800 lbs
Maximum Towed Load	8190 lbs
Length	184.5 inches
Height	76.8 inches
Width	6.5 inches
Ground Clearance	16 inches
Wheelbase	130 inches
Track Width	71.6 inches
Turning Radius	26.5 feet
Grade Capability	60%
Side Slope Capability	40%
Approach Angle	72 degrees
Departure Angle	37.5 degrees
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HUMMER





Letters to the Editor

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LETTERS TO THE EDITOR

Address correspondence to Letters to the Editor, *Boardwatch Magazine*, 8500 West Bowles Ave., Suite 210, Littleton, CO 80123; by fax to (303)933-2939 or by e-mail to letters@boardwatch.com

CYBER*STAR HERE :)

Hi Jack,

Re: your comments about UUNET backpedaling pretty hard, my discussions with UUNET took an interesting turn... we are in a wait and see mode. Basically, after two years networking with the cybercafe industry and positioning as the go-between.....<cyber cafe venue — entertainment content>....it quickly became evident that bandwidth was the big problem, surprise, NOT!

Great, I have 1,000 plus cafes internationally who are dying for content, events, and I have everyone from SonicNet to House of Blues who wants to pump the content out to a public venue...but they also need venues with bandwidth to make the corporate sponsors happy. For instance, the Tibetan Freedom Concert was set up at only a fraction of our C*SN key event cafes....one, because we didn't have much notice from SonicNet to get the word out, and two, because only the T-1 cafes could even think of trying to show the concert, and even then, it was at 5 fps in the best of circumstances.

Long story longer...I've been watching UUNET for a long time, I know a lot of their key people and, quite honestly, I think the original UUNET group (Pre WorldCom) was pretty sharp. Even then, I was very impressed with their presentation in March, courting the small business market (which is how they got where they are in the first place).

As co-founder of the International Association of Cybercafes and Editor of the Cyber Star Network....we get asked all day long, from Russia, Iceland, Bolivia, who we would recommend as an ISP. I always suggested people contact UUNET to start with, but I don't generally recommend anyone, I connect people. That is why I was so impressed with

your list of ISPs...it is a great resource. However, when I met with UUNET in Virginia and brought up the peering issues and the cost of connections from \$2,000-\$6,000 per month for those smaller, up and coming cafe/ISPs who are not yet in a position to "qualify as peers", their attitude was surprising; "too bad, old news, move on".

I am a small cog in a big wheel...and a "cheerleader" at that. I will just refer people to your list, your publication and your opinions....

I do, however, have a hell of a following in the cyber cafe industry (many of which are ISPs). My offer to collect electronic signatures was just that...a small offer of assistance to rally my friends...if I thought it would help out. Probably not...it was just an offer.

And, say, are you going to be at I-world in Chicago?

joie

Just heard from a Suzanna Crowell who is opening a 12,000 square foot Cyber-Cafe in Nashville. Apparently, these things are catching on pretty well.

As to UUNET, they of course want to gloss over any "old news" particularly bad news. I will relate two things you may accept as maxims — or not as the mood strikes.

1. It takes a certain minimum generosity of spirit to play the online communications game. Without it, you fail in the long run.

2. The world willingly forgives us our arrogance, for our brilliance. And it will just as willingly forgive us our stupidity, for our charm. But the combination of the two is deadly 100 percent of the time. In any event, no we don't really need to join forces to "bring down the evil empire" vis a vis UUNET. Though arro-

gantly, they quite correctly posture that they are quite capable of doing that themselves. But we did think our readers deserved to know...

Jack Rickard



NETCOM REFERENCE

Mr. Rickard, I've really enjoyed reading your articles in the last three weeks. I've been delving into every paper I can find and your magazine is definitely a breath of "fresh" truthful air. I've been given the dubious honor of wading thru the mire and choosing a provider for our T1. We're a credit union here in San Antonio that's pressing into the world of on-line banking.

One minor problem. One of my "possibilities" is a company called NETCOM. I haven't seen any information on them from *Boardwatch*. John McCauley at NETCOM said that he's been talking to you (via E-mail) about the mix-up. My problem is that I only have the information from NETCOM themselves in determining what's "hype" and what's fact.

HELP! Could you please give me some words of wisdom about NETCOM? Also, if you'd like to recommend a provider for a T1, go ahead. My finalists down here are MCI, DIGEX, NETCOM and WESTEL. Thanks for the help. Press on with diggin up the truth in the internet world...

Sincerely,

Michael Sorbera
Network/Internet Engineer
sorbera@texas.net

Michael:

The Netcom situation is nearly a year old, so I'm a little hazy on precisely what happened. I think some marketing babe

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went on an ego fantasy and kind of overstepped her bailiwick. I wrote a letter to David Garrison, then President of Netcom, in an attempt to straighten out the misunderstanding. It was intercepted by another office babette and rerouted to the offending person, or so I understand. So we have honored the letter of her request and Netcom is never to be mentioned again.

Interestingly, Netcom and Boardwatch had previously worked very closely together. Dennis Hayes loaned us a couple of proto-V.FC modems and we set up the first 28.8 Kbps SLIP connection to the Internet by modem. Netcom used to be a small company and we worked together on a number of "experimentals" many of which didn't lead to total success, but all of which were interesting. The company went public, the founder left, a new crew of financial geeks entered, and we've been out of contact since. It happens.

I would urge you to have a peek at the performance data in our Directory and July issue of the magazine prior to making a selection. We noted CompuServe had the best performance and SAVVIS Communications scored the best value. Beyond that, things change from week to week, prices change depending on who they are talking to, and performance actually varies by city — as you'll see from the data. I would not be providing anyone a service by making an off the cuff recommendation.

It is true Netcom is not included in the data. Not my problem. This was at their request, and the request was made with a sufficient combination of arrogance and stupidity that I was motivated to honor it. That all the players have changed in the interim is, at best, interesting.

Jack Rickard



56K LINES

Sometime in the last 6 months or so, I recall reading an article in *Boardwatch*, I believe by you in which an alternative solution was made as to how ISPs could add some 56K lines without having to invest in a lot of hardware as well as PRI lines.

Unfortunately, I can not find which issue this was in — was wondering if you recall such and can point me in the right direction.

Thanks much Steven Weisz
sysop@dv01.com

PS — faithful reader and your excellent work is much appreciated by all in our industry!

Steven:

Well, actually there is some investment in hardware, but you are probably referring to the January issue article on 56K modems — pretty much a classic Boardwatch issue at this point. You can get some of the much less expensive 2B+D BRI ISDN lines and connect them to a USR chassis that basically has their MODEMS in it. In fact, you could even use individual MODEMS. They will actually do the 56 Kbps trick. And in small quantities, they are probably easier to manage than a Total Control system.

We were planning to update the 56 Kbps story this issue with some fascinating data on actual connect speeds gleaned from ISPs. I have completely lost patience with the marketing drek which has devolved actually into lies about lies. All parties seem to have simply bailed on any pretense of truth in this battle. So we are going directly to the ISPs and collecting real world connection data en masse. I'm not even interested in lab testing at this point. We have data on some 18,000 x2 calls. The problem is that K56flex, while it HAS finally rolled out to several ISPs such as Erol's Internet and EarthLink, it doesn't appear to work. So we can't get the real world connection experience data to compare to the x2 data. If we don't get it in time for the next issue, we'll probably do the story anyway. It's probably news that K56flex isn't ready for prime time.

Finally, I took a LOT of heat from the K56flex side on the topic of the "unity" of K56flex. They insisted, in fact, they PROMISED that the Rockwell implementation of K56flex was not just compatible, but actually IDENTICAL to the Lucent implementation of K56flex. I simply refused to believe this absurd notion no matter how vehemently it was presented. In our directory, we differentiated between the two as **LucK56flex** and **RocK56flex**.

My instincts turn out to be unerring in this case. As of this writing, the two implementations won't even TALK to each other at ANY speed. We tried a Diamond Supra modem (Rockwell implementation) with an early Livingston chassis parked at Rocky Mountain Internet, and couldn't even get it to hook

up. I talked with some Livingston-meisters and they admitted that the Lucent and Rockwell implementations were actually incompatible at this point, though of course they are working on it. Hopefully, by the time you read this, they will be sufficiently compatible to do a basic 56 Kbps connection.

My early read on outcome is that Rockwell may have all the vendors, but US Robotics (now 3Com) has absolutely dominated at the consumer end. It's not even close. These people easily have 50 percent of the total consumer modem market at this point. For good or ill, they will be the dominant modem manufacturer for the next year and a half or two years anyway, and the Rockwell chip stamping machine is in serious trouble. Texas Instruments, which has dumped their military products division, is going gangbusters with DSP chips. And Microcom has actually announced a chassis to support BOTH types of cards in a single chassis — though the individual ports are fixed.

But yes, for a small player, the USR MODEM and some BRI lines is probably the lowest cost entre into providing a 56K connection.

Jack Rickard



AT&T MAIL MESS!

Jack,

first, I can't add anything to all the compliments other readers have given you over the years except that I agree! You don't follow the magazine herd and many of us appreciate that!!

Now down to business. Our LAN is using Microsoft Mail in-house and we have an AT&T Mail gateway to dial-up to the outside world. Our initial reason for doing this was to have X400 capability as one of our clients wanted us to have that capability. But in the year since it was introduced it has become our de facto internet email standard as well. And the reliability hasn't been that bad.

Not bad until last week (about 6/20), that is. Now I just found out that it takes 24-36 hours for a message to be delivered to a client of ours in Japan. I (the LAN administrator) was alerted to this today, but now other users are coming out of the woodwork and saying that domestic delivery times have been pretty sub-par too. And in some cases, you

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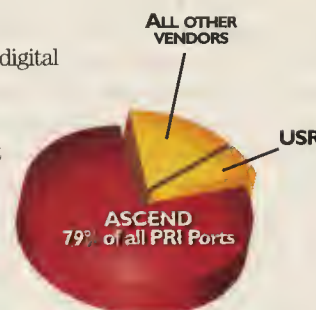
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just "can't get there from here". Some of my users now tell me they have never been able to send mail to some places, that they get their messages returned.

As I write this I am trying to sort this out and get back on my feet. I will definitely call AT&T and ask them for their account of the situation, but I was wondering if you had any big-picture insights you might want to add. Is it likely that the problem is mostly with AT&T (some of my users say they have better luck when they go home and logon to AOL!), or is this a symptom of the big Internet meltdown that Bob Metcalfe was predicting, or could this have anything to do with what UUNET did (as you described in the last issue)? Or am I just missing something obvious here in-house? I know I sure have a lot to learn yet.

Well, thanks for your time!!

Chip Melli
ip:law@aum@ratnpres.attmail.com

Chip:

Let me preface my reply that noting I haven't a clue, and don't know what I'm talking about. You can ask anybody. It's true.

That said, AT&T is currently in the throes of migrating to a brand new backbone, and one that looks pretty good actually. I would expect some malaise as they move from the odd combination of POPs, BBN backbone, etc. to their own national system, but it should be pretty transitory.

These large companies are terribly secretive, despite the fact that it hurts them more than helps, over and over and over again. But I suspect that this is what you are encountering. I have never heard of anyone leaving AT&T WorldNet for AOL, and view the concept as slightly preposterous. But I suppose it could happen.

Jack Rickard

◆◆◆

SERVER TECHNOLOGY

Dear Jack:

As always, congratulations on a consistently excellent publication. I am rarely so confident in relying on a single source of information as Boardwatch allows me to be. Boardwatch Magazine is a true luxury.

I am writing to ask you if you know of a current and fairly comprehensive book covering Server technology from soup to nuts. I need to learn more about the strengths of UNIX vs. Windows NT in the areas of both price and performance. In addition, I also need to become more familiar with the different vendors offering hardware and what markets and price points they are targeting. I have very focused needs but lack the expertise to implement a solution with a sufficient level of confidence. Moreover, I'm about to topple over the side of my chair due to the nearly drunken condition that all of the marketing glitz has left me in! If I look at one more "Ours does everything" claim I am surely a goner!

Any suggestions would be greatly appreciated. Thank you.

With best regards,

Bill Catlan
WCATLAN@aol.com

Bill:

Hah. Me too buddy. On all counts. Let me know first, if you figure something out there. The UNIX vs. NT thing has become a religious war of staggering proportions. There are adherents on both sides, and they are vociferous in their espousal of gospel and doctrine.

We run two NT servers, two Novell servers, two IPADs, and a BSDI UNIX machine here at Boardwatch along with an assortment of experimentals and specialty boxes. If the only tool you know how to use is a hammer, all the problems start to look like nails. It is actually true that each does everything. But each does some things well, some things the hard way, and some things in near comical fashion.

But good news: I understand Java will save us from all that....real soon now....

Warmest Regards and Shared
Commiserations;

Jack Rickard

◆◆◆

PRESS RELEASE

Dear Jack:

A friend of mine, Jamie at Stavin, told me about your gracious letter to their company thanking them for their pleasant response to your questions for oak (I

spent 15 years in the wine industry so know your dilemma)...based on your exhibited ethical business mores I thought you might find the attached story interesting..

Monkey Business on Web takes new meaning — Pornographers commandeer cyber-habitat.

FOR IMMEDIATE RELEASE: June 25th, 1997

Howler Products, a fledgling, but successful, San Francisco based sorbet company that makes healthful products from the rainforest, finds itself in the same dilemma as corporate giants such as Toys R Us and MicroSoft; their web site/name has been abducted. Their site, www.howler.com, which operated on the web for almost a year, has been commandeered by a company who claims they are to use it for "adult services content" a well known euphemism for pornography. With beautifully packaged cartons, featuring a delightful howler monkey and their web address on the shelves in all 50 states, Douglas Stewart, the founder and CEO, is concerned that children who should be able to learn about exotic fruits and the rainforest from www.howler.com will instead discover materials entirely inappropriate for them. "We work with Amazonian small farmers and forest people, importing rare fruits from the rainforest, and turning the fruit into all natural sorbets. The company is named after the rainforest's howler monkey, that's what's supposed to be on our web site. We are not against free speech or pro-censorship, we just want our domain name back. Other people can put what they want on their web sites, just not on ours."

How did this happen? How can a company that is aiding the indigenous people of the rainforest, educating children and providing a healthful, natural food get caught in a cyber-fray?

It starts with a processing error at InterNIC, the Washington DC based firm that handles this bureaucracy. Howler Products submitted their application for [howler.com](http://www.howler.com) in 1996 and attempted to pay their registration via credit card. According to Ms. Proel of Internic, the expiration date of the card was missing, however, Internic failed to contact Howler at their billing address to advise them of this error, and subsequently delisted [howler.com](http://www.howler.com). As Howler were unaware of the Internic accounting error they continued about their busi-

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ness, including printing 100,000 cartons with their web address and sending them into national distribution.

At the end of May 1997 Douglas discovered that his web site was no longer active, after researching the situation he found that Soma.net, a subsidiary of Hodge Interactive of San Francisco, had purchased the name for \$100. Discovering the billing error Doug contacted Soma.net and corresponded with Jory Bell head of On-Line Services. It was through Mr. Bell that Howler was informed that it would cost \$6500 to "buy back" their domain or else it would be used for "adult services". Douglas explained the billing error and resulting situation and offered to reimburse Soma.net their out of pocket expenses, i.e. \$100 plus paperwork, but was informed it would be \$6,500 or unavailable, a significant return on investment for Soma.net"

Internic refuses to get involved in the dispute, even though it was their error that caused the problem in the first place; Soma.net does not recognize that Howler Products has the rights to the name; even though Howler is federally trademarked and copyrighted, is protected under common law of interstate commerce, has proof of first use and

complies with all other acceptable business practices.

Lack of jurisdiction on the Internet has enabled Internic to supplant 400 years of business codes, becoming the governing body of the Web without any accountability. Internics unchecked business practices and errors are resulting in companies incurring expensive, ethically challenging, time consuming and possibly business damaging predicaments with no solutions available, thus facilitating less scrupulous entities to profit too.

Pending legal resolution consumers should be made aware that currently howler.com should not be accessed by children; information on Howler Products can currently be found at www.flavorweb.com/howler.htm and Howler can be contacted via e-mail at HowlerProd@aol.com

For more information please contact:

Douglas Stewart,
CEO Howler Products
Tel: 415.824.0686
Fax: 415.824.0697
e-mail HowlerProd@aol.com

Melanie Donaghy

MD & Associates
Tel: 415.258.0563
Fax: 415.453.6789
e-mail: md@flavorweb.com

Good luck with your home winemaking venture.

Kind regards,
Melanie Donaghy

Thanks Melanie.

It's going well actually. Just some comical interludes with some of the vendors. Jamie at Stavin being a notable and refreshing exception — and with no prospects for a sale at that. I'm making some meads that are coming out very nicely, thank you, and experimenting with both American and French oak aging — a debate much like the UNIX/NT situation described above.

The domain name issue is terribly real. I would like to publish this missive in our letters to the editor section. Opportunists do definitely abound on the network, and the InterNIC has had some serious problems with billing and invoicing.

Warmest Regards;

Jack Rickard

NCSA...

Mr. Rickard,

My coworkers and I thoroughly enjoy reading your magazine, your opinions and straight up reports are refreshing in an online world full of total BS magazines not worth the paper they are printed on.

As you can tell from my email address, I work for XXX, the XXX subsidiary and networking company. My position is in a smaller part of the company which produces the XXX firewall service. This is not an official XXX or XXX statement or position by any means, its an opinion shared by myself and others in my company and the industry (I have discussed these thoughts with others outside of my company).

I was wondering if you ever considered taking a hard look at the organization known as the "NCSA" (National Computer Security Institute). This organization, based in Carlisle PA, is ostensibly a computer security oriented organization that brings together similar industries and forms these so-called "consortiums". For example, we, and many other firewall vendors, are members of the NCSA Firewall Consortium.

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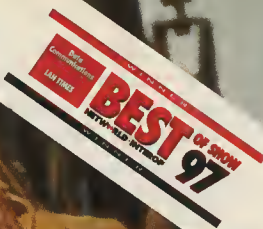
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Their business plan seems to have evolved into one in which they leverage their name (assuming that it is reputable and formidable sounding enough) by coming up with a so-called "NCSA Certification" for just about everything computer & Internet related. Sounds good, so far, right? The problem is that in order to become "NCSA Certified", one must pony up an annual fee of around \$12,000 or so, and they then bless you or your product/service with their seal of approval. The criteria for earning this approval seems to be just that you pay them the money. The actual tests that they run to validate your product are minimal and can be done for free by anyone with a PC.

Companies (like my own), feel that to be considered legitimate, they simply must have this seal, so they feel somewhat compelled or pressured into paying the money for the seal. I am not making excuses for this, my own company did it for the product I work on and everyone knows it is a complete waste of money, including the people that signed the check.

They form these consortiums for the various areas that they are involved in, lately they just started an ISP consortium. A couple of times a year they hold

a meeting in which a small handful of company representatives attend, mostly these meetings are 70% NCSA people and 30% actual paying consortium meetings. The president, Mr. Peter Tippet, recently proposed coming up with some sort of NCSA driven RFC process (he used a different term than RFC). He was then shocked to find out that there was already a well established process for pushing a proposal from draft to RFC to Internet Standard handled by the IETF (which I don't think he even knew existed). I think he expected that the NCSA could take over this function and charge an arm and a leg to do it.

My point is this — this organization provides no original service, they provide no discernible leadership in the area of computer security (a la CERT), and they produce nothing to enhance the security of the Internet. Their angle is to take what they can get for free from the Internet, then they rewrite it (if its a security alert or a proposal of some sort from a newsgroup or CERT, for example) and submit it to the NY Times in order to generate a story that associates the NCSA with computer security somehow. Their business is based on getting positive press for themselves and then leveraging this. The media eats their stories up without investigating the source to look even a little below the surface, and vendors and companies then begin to feel the squeeze from their customers asking questions like "why aren't you part of this NCSA consortium?" or "why don't you have the NCSA seal?"

Their consortiums and trade shows are thinly attended and are full of proposals by the NCSA to provide some survey or have another unattended trade show. They constantly are coming up with a new survey of some sort to do, but they want all the consortium members to pay additional money to sponsor it.

I am not against making money for providing a service or organizing different vendors for a common and useful goal, but the NCSA does neither of these. They organize for the sake of organizing and are incapable of an original or useful proposal of their own.

Sorry this was so long winded, but it has been a big sore point for myself and many of my coworkers and others in the industry that I have discussed it with at trade shows and other meetings. If you choose to write about this or print excerpts from it, please don't use my company name, as I am writing this as an indi-

vidual with an opinion and its not to be considered an official statement by XXX or XXX. I would rather not be mentioned at all, I just thought that your magazine might be able to take a critical look at the NCSA sometime and expose it for the useless organization that it is.


Name withheld
XXX Communications

Very pleased to receive your letter and I would very much like to print it. Here's why. Every time I go after one of these things, I'm perceived as cranky, cynical, and crabby, and somehow "competitive" with whatever they are trying to do. Your letter brings some of this to light, without it being from me. I really do NOT know anything about NCSA and cannot speak to this specifically. But on a general front about such efforts, I share your perception entirely. They not only do these companies a disservice with the "reportmail" extortion tactics, but they smear any legitimate efforts to certify or quantify anything at all.

But the bottom line is they do it because large companies such as yours lack sufficient moral courage to NOT write the check. It only works if everybody buys into it. And over and over, I see these scams succeed because you are not only providing them the money, but more importantly your imprimatur as a credibility watermark by doing so. The companies in your industry are "voting" these operations into business themselves. They are preying on your marketing groups product insecurity, and the suspicion and distrust the companies within the industry have of each other, to defraud them of credibility.

The answer is to follow your own instincts. If you do not have good and sufficient reason to believe that the credentials offered by this certification are legitimate and a worthwhile contribution to customer education and utterly above reproach fair play, just say "no." If you do, actively support it. If customers question your participation or non-participation, show them why, directly and sincerely. Most of them are not as ox-like as you apparently perceive them.


There is another side to the story. Don't base this analysis on whether your own ox got gored or not in the last "survey." We all have to operate or at least participate as employees in businesses that need to succeed in the marketplace to continue existence. Often it is a competi-



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tive marketplace. But at the same time, there ARE things that can and should be done cooperatively and for the good of the development of the industry — many of them specifically to get the body politic customer base up on the learning curve. If you're not selling schlock yourself, you will be, in 100 percent of every case, better off with a more educated potential customer. So every visionary in any particular industry should have another point of view in their pocket beyond that of direct competitive self-interest — a broader view of the good of the industry as a whole. This is particularly, nay, **PERNICIOUSLY** true of high technology industries where the market place is often confused and confusing to the customer base.

Further, every dog has its day in the sun. Comparative data and certification can be important tools, not only in educating customers, but to give you a watermark to tune products, performance, and other aspects of your operation against. If you didn't rate number one in the last survey, it can often be very focusing and clarifying to have something specific to shoot for.

Finally, there is another reason these companies exist. Demand. They are filling a market need. They may be doing it

abysmally, and even dishonestly. Or they can do it very well. But they are filling it. The disinformation and misinformation put out by marketing and PR groups of companies in many industries leads to wary, cynical customers who are actively **LOOKING** for somebody, somewhere, to provide an independent view that can rationalize sales claims that frankly can themselves be not only confusing, but dishonest bordering on the fraudulent. These customers are willing, and at times anxious to pay for an independent view. We ourselves have been under intense pressure from nearly everyone regarding the by now riotously dubious claims of Internet service providers and national backbones over performance and other issues. It is actually forcing us into a position similar to NCSA (though I hope we're doing a better job of it than you describe) though we have no reason to want to get into the testing and certification business — we're a publishing operation. But again, the customer base is not entirely moronic, they know they are being abused and they want an independent means of verifying or debunking sales claims.

Regards;

Jack Rickard

JULY EDITORIAL

Mr. Rickard,

Again I have the pleasure of commenting on one of your works. (You might remember me from the mild tongue lashing over facts about the Alternic.) Yes indeed, the "kid", one Mr. Roberts did come to Canada. It was actually Eugene of the Alternic that introduced me to Tim Roberts and his company. Eugene saw that Diamond.Net (now SAVVIS) was doing similar things as Skyscape Communications and since Skyscape was looking for some serious north/south connectivity that we should hookup. (to this date one year later we still haven't connected to SAVVIS, we're waiting for them to at least "ring" the network) Some months later I had the extreme pleasure of bumping into SAVVIS staff at a New York art show (Skyscape was providing a wireless T1 link since the time line was insufficient for NYNEX to put a hardwire in by just 2 days), I was quite taken by the knowledge level of the SAVVIS receptionist. Skyscape decided that we should make a trip down to St. Louis and check out just what SAVVIS was up to. After an interesting tour through the bowels of the SAVVIS network.



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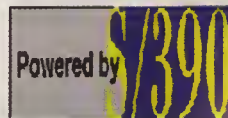
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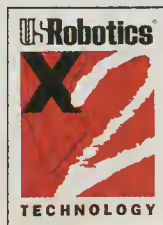
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I was convinced what I was working on in Canada was the correct model! About 2 - 3 weeks later Skyscape heard that Mr. Roberts had completed "phase 1" of the SAVVIS network and was now available to work elsewhere. Skyscape brought him to Canada to consult on the deployment of the model we were working on. He's been here since and recently accepted the position of Skyscape's President. Our new hybrid model is going to be faster still by providing domestic and international services in an IPNAP switching format.

Tim Gibson
NOC Manager,
Skyscape Communications Inc.

Tim:

Thanks for the update. We also mentioned the investor in SAVVIS being affiliated with the Busch family of brewing fame. I'm told he's actually part of a soda pop empire and not connected with the Busch group in any way.

In any event, it's interesting to note Mr. Roberts' whereabouts and the developments at Skyscape. We're seeing some very interesting alternate models of a lot of things and some seem to hold a bit of promise.

Jack Rickard

NET.MEDIC

Hi Jack (again),

"VitalSigns has published a white paper on their web site that is comical marketing drivel, so there really isn't much public information on what or how this program does anything."

And therein lies the problem with Net.Medic.

Sometimes we get Net.Medic "diagnoses" emailed to us by clients. They say things like "ISP Entry router delay" and suchlike.

But who knows what that means. The client doesn't, and the VitalSigns people ignore my pleas for some information that will help me understand what their software wants me to fix.

The client generally says that their Internet link is subjectively working fine. But we'd consider changing stuff (if only to avoid our clients getting the "wrong" idea about our network thanks to Net.Medic). But what? Nobody has any idea what Net.Medic is measuring, except maybe someone at VitalSigns — and they don't seem to want to say.

Steve Davies
Internet Africa South Africa

Steve:

Unfortunately, it is all true. Net.Medic has an interesting interface and is indeed an interesting concept. I would love to see more and better measurement tools anyone can use. But I am increasingly convinced this isn't one. We see inexplicably inconsistent results even when measuring known and controlled things. The company refuses to discuss methodology. It's a toy. And unfortunately it is a damaging toy. Knowledge-free users are contacting a number of ISPs who are helpless in the face of the almost total lack of information.

Jack Rickard



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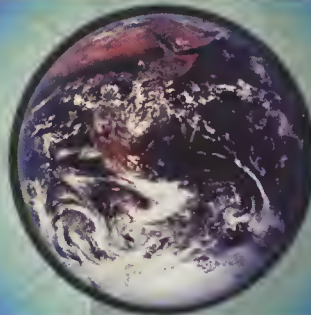
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VERIO

VERIO INCREASES CAPITAL POOL TO \$250 MILLION

Verio (www.verio.net) started in March with **\$80 million** in venture capital. In late May, the company secured another **\$20 million**. Finally, in June, it sold **\$150 million** of senior unsecured notes maturing in 2004 (common stock), bringing its financing to a quarter of a billion dollars. The company has been aggressively buying successful Internet service providers throughout the United States and is building a national backbone to connect them.

PAC-WEST TELECOMM AND NET TAPE STRIKE A DEAL FOR INTERNET BACKUP SERVICES

Pac-West Telecomm (www.pacwest.com) provides telephone line service to ISPs in almost every California city. In June, the company struck a deal with SafeGuard Interactive (www.sgii.com) to offer Net Tape to all its customers. As a result, every ISP that uses Pac-West will be able to offer fully secured, Internet-based file backup to all of their customers.

A screenshot of the SafeGuard Interactive Inc. website. The header includes "safe GUARD INTERACTIVE INC." and "Welcome to... www.sgii.com". Navigation links include "home", "index", and "feedback". A menu bar lists "WHAT'S NEW", "PRODUCTS", "SUPPORT", "COMPANY", and "RESOURCES". The main content area features a "netTape" advertisement with the text "SafeGuard Interactive Incorporated provides powerful, yet simple to use, data backup and recovery, remote storage software products and services for individuals, small businesses and home offices with Internet connections." and a large "Order netTape NOW!" button with a "click here to order online" link.

Pac-West will be the exclusive distributor of Net Tape to its ISP customers. The ISPs will be able to offer the Net Tape backup service for **\$9.95** per month.

Net Tape is available to ISPs and is meant as a value-added service to Internet users. It allows users to back up their files through their ISP. All data is stored at SafeGuard's facility outside of Pittsburgh, Pennsylvania.



ISPTRAK BILLING SOFTWARE FOR ISPs

Action Computer Service has released what it calls "the affordable billing software for ISPs." ISPTTrak 2.40 sells for **\$199** and runs on Windows and Linux servers. The software has no per-user license fees so, regardless of the number of subscribers, its price is still under two hundred dollars.

ISPTTrak imports RADIUS files from any remote access server, then generates reports for billing purposes. It can also implement tax codes, read ASCII files, even integrate with QuickBooks. A free 30-day evaluation copy is available at www.cyberacs.com.

CRACK A MAC — THE NEXT GENERATION

Infinet Information AB has sent an open invitation to all hackers in the world to try to crack its Macintosh-based web server. The company is so confident that the Mac OS is secure enough to survive an onslaught of the world's best hackers, it is offering a cash reward of 100,000 Swedish Kronas (roughly **US\$13,000**) to the first person who can hack into its "Hacke" server.

The contest began July 4 and runs through October 15. The server, which is located at <http://hacke.infinet.se>, contains all the system information any hacker needs to begin.

AOL TO INCREASE x2 DEPLOYMENT

After months of successful field testing, AOL Networks (AOLnet) announced that it entered an agreement with 3Com/US Robotics to increase its implementation of x2. This will allow America Online members to download data at speeds near 56 Kbps when accessing the network using x2-based modems.

According to both companies, "By the end of 1997, approximately 65 percent of AOLnet is expected to be based on 3Com/US Robotics' Total Control remote access equipment." The move does not require hardware upgrades since AOLnet already uses US Robotics' Total Control servers, which only require software upgrades for x2.

NEW VERSION OF MAIL SERVER MAKES ISPs SPAM PROOF

The latest release of Software.com's PostOffice comes with a feature that allows ISPs to block incoming mail from certain domains. PostOffice is an easy-to-maintain e-mail server that also works on corporate intranets, as well as on an ISP's network.

Post.Office 3.1 is currently available for Windows NT and all major UNIX platforms. It costs \$495 for each 100-user license. For purchasing information, go to www.software.com.

56K.COM A COMPREHENSIVE RESOURCE FOR 56K MODEMS

A new web site, The 56K Modem Home Page (www.56k.com), is devoted to all issues related to the new 56 Kbps modems. The site's founder, Les Jones, says that the site is "designed to be the ultimate resource for 56K modem owners and buyers."



The site has a column for 56K Resources and another for 56K Newsflashes, both of which are updated daily. The Resources section contains updated information about upgrades, firmware, even drivers. The Newsflashes section has the most

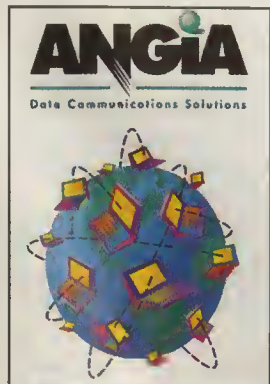
current stories about who is implementing 56K, what flavor of 56K they are using, and when the modems will be available for sale. This is a definitive site for anyone looking to upgrade to a new 56K analog modem.

COMMERCE DEPARTMENT REQUESTS COMMENTS FOR DOMAIN NAMES

The United States Department of Commerce is requesting comments on "the current and future system(s) for the registration of Internet domain names." The National Telecommunications and Information Administration will be accepting e-mail and written comments regarding the method by which generic top level domains (gTLDs) are administered. Comments are welcome from anyone until August 18, 1997 via e-mail (dns@ntia.doc.gov) or snail-mail (Patrice Washington, NTIA Public Affairs, 14th and Constitution, NW, Room 4898, Washington, DC 20230).

ANGIA TWINCONNECT 112 Kbps DUAL-LINE ANALOG MODEM

Angia (www.angia.com) will release its TwinConnect dual modem this fall. The TwinConnect contains two 56 Kbps modems which can be combined for 112 Kbps over two analog telephone lines. It will be available in ISA and PCMCIA format. The TwinConnect will employ K56flex technology, making it compatible with ISPs using the Lucent and Rockwell chip sets.



Angia Product Manager Glenn Cox said, "Users will also find the dual-line analog technology to be extremely familiar — in fact TwinConnect is completely Plug & Play, requiring nothing but a second telephone line."

Connections will be dynamic. A user can be connected at 112 Kbps, then drop one of the 56K lines without losing the entire connection. This feature will allow the user to make or receive a phone call or fax while on the Internet.

The TwinConnect comes as an ISA card and costs \$279.

PERSONNA REMOTE LIGHTING CONTROL SYSTEM



In an effort to help computer users with problems such as eye-strain, headaches and blurred vision, Lutron Electronics has created the Personna personal lighting system. It allows individuals in an office to control the brightness of the fluorescent lighting above their desks or in their areas.

The Personna system costs \$200 per fixture and is available by calling (800) 523-9466 or through Lutron Electronics' home page at www.lutron.com.

LUCKMAN INTERACTIVE ANNOUNCES UPGRADE TO ISP CONNECT PRODUCTS

Luckman Interactive has announced ISP Connect 2.0, a complete package that allows ISPs to connect new users to the Internet. ISP Connect 2.0 includes Web Register, a client/server that allows ISPs to register their customers online automatically, and Net Commander, a complete suite of access programs for the Internet.

"We first introduced ISP Connect's Web Register as a Windows NT product, but NT is not scalable," said Brent Luckman, CEO of Luckman Interactive. "Web Register's server component is now Java-based, allowing support for all versions of UNIX."

Web Register can easily be integrated with minimal setup time and without additional telecom equipment. It reduces technical support calls and makes it easier for new users to get connected. The product supports the ability to define and track a variety of service and pricing promotions. The Net Commander software suite includes Web Register's wizard-driver client component, and is fully customizable to provide an ISP-branded look and feel.

Luckman Interactive can be reached at 1-213-614-0966 or www.luckman.com. ♦



TECHNOLOGY FRONT

by Jim Thompson
Western News Service

THE A:DRIVE

What looks like a floppy disk drive, reads and writes to standard double- and high-density diskettes, but can also store up to 120-MB of information? The answer: The **a:drive** from **OR Technology**.

The a:drive looks and operates just like a standard 3.5-inch diskette drive, but when used with LS-120 media can store up to 120 megabytes of information. Once installed, there is nothing to do, remember or set. It uses laser technology and can also be used as a bootable drive. OR Technology worked with Microsoft and Compaq to develop standards for enabling the operating system, the computer system and the a:drive to work together.

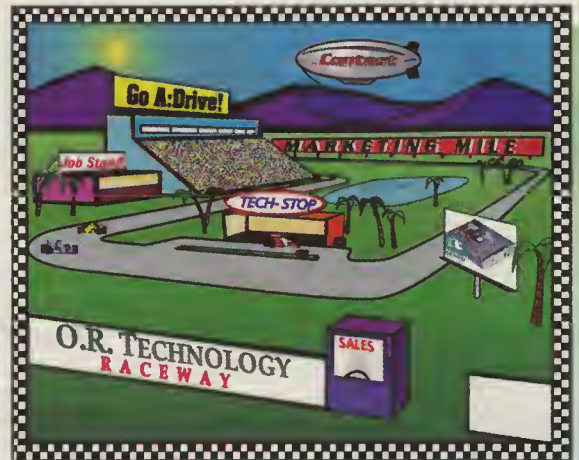
To make it a bootable drive, the BIOS of your computer must support ATAPI devices as bootable devices, or you must install a FloppyMAX IDE controller card. The newer versions of both Windows 95 and Windows NT operating systems can recognize the a:drive as a bootable drive in both 120 MB and 1.44 MB mode. If you are running an older version of these operating systems or other operating systems (DOS, Windows 3.1, etc.) you will need to load software drivers. Currently, there are no drivers for OS/2 or UNIX.

The standard a:drive (model FD-3120A) is 12.7 millimeters high, 96 millimeters wide and 124 millimeters long, making it the same size as a standard diskette drive and a perfect fit for your drive bay. You don't have to make any changes to your existing system. The slimline version (model FD-2120A) fits perfectly in notebook computers, but is only half the weight of conventional drives.

There are also a number of other advantages over standard drives. The a:drive spins faster, reads and writes to higher density media, and uses voice coil motors for precision and speed. It has an access speed that is up to five times faster than floppy disk drives.

OR Technology says the next version of the product, "slated for production in early 1998," will be compatible with the IEEE 1394 interface standard and will support Microsoft's Simply Interactive PC (SIPC) platform and the Device Bay Initiative.

The IEEE 1394 serial bus is a new connectivity standard which is being hailed as the key to connecting computers to high-bandwidth consumer products like televisions, radios and telecommunications products,



allowing it to serve as a universal interface for computer peripherals and consumer electronic devices.

The Microsoft SIPC platform will reportedly be a sealed device that will serve as the interface for other devices and for controlling home-entertainment equipment. One of its elements is the Device Bay Interface specification which will allow peripheral devices to be plugged directly into the CPU. Devices such as the a:drive, hard drives, modems, audio/video interfaces can be plugged into this bay.

With IEEE 1394, up to 63 devices can be daisy-chained to share a single bus. It can also carry multiple channels of isochronous and asynchronous data simultaneously allowing the bus to handle real-time data, digital audio and video streams along with traditional forms of control information between devices. Video cameras, CD-ROM drives, printers, storage devices, camcorders and VCRs could be used with this standard.

According to OR Technology, "Initial device bays will use the ATAPI/IDE interface. OR Technology currently offers two products compatible with this standard, the desktop a:drive, model FD-3120A and its slim-line product, model FD-2120A (available third-quarter, 1997) targeting portable and ultraportable computer systems. To convert these products to the IEEE 1394 standard, the ATAPI/IDE block in the interface ASIC will be replaced with a 1394 block. For a smooth and rapid transition, converters will be used initially."

The a:drive uses technology found in conventional floppy, hard and CD-ROM drives. Like disk drives, it uses magnetic data tracks for read/write functions. Additionally, an optical system, like those found in

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CD ROM drives, is used to precisely position a dual gap head and enables 2,490 data tracks per inch (TPI) and 120 MB of data storage. Conventional floppy drives use 135 TPI for 1.44 to 4 MB. It is this "dual-gap head" that allows the drive to read and write to conventional floppy diskettes as well as 120 MB LS-120 diskettes. The a:drive is also downward compatible with 1.2 MB floppy formats from NEC and Toshiba. These abilities rely on precise positioning of the read/write head.

OR Technology describes to operation of the system in this way: "Light, holograms, lenses and mirrors make up this system and provide the information needed to exactly position the head.

The LS-120 Media — A Look Behind The Scenes

The media inside the LS-120 diskette shell is manufactured from a PET (polyethylene terephthalate) substrate and uses a dual layer coating of high-density metal particle (MP) for high coercivity. The media is thinner (.0025-inch in comparison to .003-inch) than that found in traditional floppy diskettes and provide better head-to-media contact.

At the factory, one surface of the LS-120 diskette is laser etched with a precise servo pattern. The laser etching is not constant, but intermittent, producing tracks that are "stitched" instead of being continuous stripes. The process creates 900 concentric circles with tracks that vary in length from 43 to 77 microns depending on their location. Shorter tracks are closer to the hub or center of the media while longer tracks reside at its edge. The distance between all tracks is equal regardless of location.

The optical track pitch is 20.4 microns wide including a 2 micron wide laser inscribed marks surrounding magnetic tracks (From track edge to next track edge, measurement begins with a one-micron-wide half stitch, eight microns of data, another two microns of laser mark and another eight micron track bordered by a final half stitch. At this point the period starts all over again). The stitches contain the tracking information while the magnetic tracks contain the data. LS-120 technology optimizes the amount of space where data can be stored unlike alternative technologies that rely on magnetic servo. The laser servo data is written in between the data tracks, in an area that is typically used for guard bands, instead of taking up valuable data space.

As a result, 20 to 30 percent more data can be written using laser servo in comparison to magnetic servo. In addition, the servo information on LS-120 media is indelible. This feature enables users to bulk erase and reformat disks easily for additional use.

IDENTICAL SPACING MAKES IT WORK

The center-to-center spacing on the spots is also 20.4 microns wide, a perfect match with the optical track width 2. When the spots are directed toward the media, they project across an area seven tracks wide. The laser inscribed marks on the disk absorb light while the reflective areas between the stitches bounce it back. A modulated signal results as the stitches or laser inscribed marks pass by. The light level jumps up and falls back down repeatedly at 20KHz or 20,000 times per second. The servo system uses the feedback from the reflected light to provide instructions for precise head positioning over an infinite range of possible locations.

"At the heart of the optic system is a hologram. Held on the tip of your finger, it looks like a tiny piece of square-shaped glass. It contains a two dimensional image developed from a complex computer optimization program that took into account light efficiency, thermal dynamics and geometry constraints.

"A laser diode, just like those found in compact disk drives, provides the light source which illuminates the hologram. As light passes through the hologram, it forms a pattern of six spots. Three of these spots are used to position the head on LS-120 media and three are used to position the head on 720 KB or 1.44 MB floppy diskettes. Each set of three spots contains two 'striped' spots and a single spot without stripes. The

As light is reflected from the disk, it passes through a lens which focuses it onto one of the six pads of the photo detector. The light from each of the striped spots falls on a different pad on the photo detector providing positioning information. The spots are moved across the tracks to obtain the level of light required, a function called servoing to a phase angle in technical terms.

This enables fine resolution down to a single nanometer and a constant determination of head position in relationship to data. The ability of the spots to range over several tracks at once makes the system more robust. Because of this and other features of the LS-120 drive, a damaged or missing laser mark doesn't mean that data can't be located. The LS-120 head will remain precisely positioned by a pair of voice coil linear motors as they race to the accurate position on the data tracks.

DOWNWARD READ/WRITE COMPATIBILITY

As stated earlier, the lens focuses the striped spots to a point on the surface of a mirror, the wedge-shaped mirror bounces this light up to the surface of an LS-120 disk. It also bounces it down to a linear encoder. A pair of striped spots is used to provide tracking information while a single non-striped spot is used to identify track zero. With this data, the drive is able to find tracks on the media and position the drive's magnetic heads when older 720KB and 1.44MB diskettes are used.

Because of its efficiency, the optic system enables the drive to be precisely calibrated to work over a very wide temperature range and replaces several conventional optical elements at a much lower cost and mechanically simplifies head assembly. For this reason, drives based on LS-120 technology do not require the use of a stepper motor for positioning or a mechanical switch for identifying track zero.

IDENTIFYING LOCATION

Just as a common floppy disk drive does, track identification is determined by the information that is written magnetically on the track. LS-120 drives use the same file allocation table and cluster address system as ordinary floppy disk drives.

However, the LS-120 drive is smarter. In addition to doing all that a floppy disk drive can do, it contains integrated circuits that keep track of everything and tell the drive where to go to get information. A defect management table on each disk and error correction capabilities in the drive are unique to LS-120 technology. The drive can identify errors and correct them. Corrections are made for small imperfections in the data or disk wear from use. Like tape drives and hard disk drives, the LS-120 floppy disk drive uses error correction code, enabling the drive to pack data closer together and accurately recover it. ♦

Information provided by OR Technology

striped spots are actually made up of seven individual pin points of light which give the spot a striped appearance.

"As light leaves the hologram, a lens focuses the spots. A mirror bounces the light in two directions; up to the surface of an LS-120 disk as it spins parallel to the optic system and down to a photo encoder.

"On the media, the seven stripes of light are projected over seven tracks and provide tracking information. The non-striped spot, known as a *modulation spot*, measures variations in the servo pattern etched on the media so that the intensity of light making up the striped spots can be adjusted on the fly.

"The interaction of the spots with the LS-120 media provides the tracking information required to write data accurately on tracks that are 10.2 microns wide. Understanding how the spots and media work together can be aided by taking a closer look at the unique attributes of LS-120 media."

(For a description of the LS-120 media see the accompanying article titled "The LS-120 Media — A Look Behind the Scenes")

Since LS-120 drives spin the media at higher speeds access time is increased. Access is five times faster than a standard floppy disk drive when LS-120 diskettes are used and three times faster when 720 KB or 1.44 MB diskettes are used.

The a:drive is an IDE devices and cannot be connected to the floppy controller. Instead you must connect it to an IDE controller card or a FloppyMAX IDE controller card from Promise Technology. BIOS support for the a:drive has been announced by AMI, Phoenix and Award.

CONCLUSIONS

It's about time that the old floppy disk drive gets an overhaul. Storing 1.44 MB of data on a single disk was a pretty big deal back in the days of the 286 processor and 20 MB hard drives. Today, it is barely adequate. The best part of the a:drive is that it will take over the real estate currently occupied by your existing floppy drive. This may not be such a big deal for the desktop computers, but for the portables it is a major addition.

CONTACT

a:drive

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The one question everyone asks is how the a:drive compares to Zip and SyQuest drives. Actually, there is no comparison. The a:drive is a replacement for the floppy drive, while the Zip and SyQuest drives are replacements for the hard drive. The a:drive is five times faster than a standard floppy but not as fast as a hard drive. Which is better depends on your needs. Personally, I prefer the convenience of having the drive inside my portable instead of in a separate box that adds weight and inconvenience to my travel gear.

You will also find the a:drive to be a real blessing if you have to move data from one machine to another via "sneaker net" or do frequent backups.

I found the a:drive to be easy to install and equally easy to use. It also did an excellent job of reading all of my floppy disks, even those old 720 KB disks that I still have hanging around. ♦

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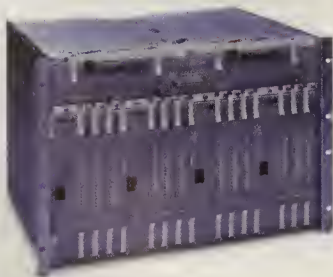
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and Still Nothing Will Be On Internet Multicasting and the Multicast Backbone

by Bob Stein

Bob Stein is a software developer and technical writer who wrote dozens of manuals and developed several communication interfaces for Galacticom's Worldgroup software, including X.25, SPX, TCP/IP, and Active HTML. He's now an independent consultant specializing in hyper-useful user interfaces. He welcomes comments at bobstein@earthlink.net

It's becoming easier each month to imagine it. The Internet is gradually but inexorably promising to reinvent telephones, radio, TV, libraries, video stores, newspapers and magazines.

Ground-shifting progress in areas like these has a long way to go, but there are clear encroachments on a daily basis. What may not be so clear is how today's Internet is totally inadequate for large scale broadcasting: the dissemination of information simultaneously to a large number receivers. This is a serious obstacle to the appearance of radio-like or TV-like things on the Web. This is not just a quantitative bandwidth limitation, but a deep structural limitation.

First, let's draw some cyberspatial contrasts between the familiar 1920s term *broadcasting* and the technoid eighties term *multicasting*. In computer networking, broadcasting has come to refer to the indiscriminate transmission by one machine on a network to every other machine on the network. While workable to a point in local area networks, this kind of thing would be unthinkable on the global Internet — a handful of careless or malicious hosts could consume all the world's bandwidth. So broadcasting in this sense on the Internet is completely verboten.

Multicasting is an elaborate scheme by which anyone on the Internet, with the transmitter's permission, can join a special-purpose group, and thereby plug into a stream of information, such as video, audio, software updates, or a news feed. Joining and leaving a multicast group is a very dynamic thing; it can turn on the click of a mouse. For an individual router on the network (a typical globe-spanning Internet connection today crosses a dozen routers in a quarter of a second) the task is to keep up with the needs of neighboring routers and other computers on who's receiving and who's transmitting so the parties can be linked, and to do so quickly and efficiently, and without neglecting all the other traffic.

But wait a minute, why can't one simply tune into the Spottsylvania Spleenball Tournament web page just by hyperlinking to their web site? Why all the hubbub?

There is definitely some hubbub among the grease-monkeys in the Internet engine room. By my informal count, fully one in nine of the draft standards coming out of the Internet Engineering Task Force (IETF) addresses some aspect of multicasting. That may not sound like a lot, but I couldn't find another subject with more attention. That's more proposals than are dedicated to security issues, and over twice as many as are dedicated to IPv6, supposedly the next generation of IP (*the* Internet Protocol) and the only salvation humanity can count on to avoid running out of IP addresses and other global pandemonium in just a few years.


There are two distinct kinds of problems multicasting solves: real-time (such as audio or video) and non-real-time (software updates, newspapers). It usually goes that in real-time, accuracy can suffer for the sake of timing. Non-real-time usually requires perfect accuracy. The immediate interest in multicasting appears to be for real-time video and audio, but everyone recognizes the long-term opportunity for data subscriptions and other non-real-time applica-

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Create new programs and manage (Preferences) Programs.

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Release 1.1.64

PROGRAMS

Program Name	Channel	Date & Time
Unix		Jun/30/97 03:00
unix channel		
Review Delete		Download Session File
Unix-2		Jun/30/97 13:00
Refuses from ircnet's unix meet is here for f...		
Review Delete		Download Session File
AKL TelePresence Microscopy C...		Jun/23/97 07:00
This is an experimental session at the Arbonne N...		Jun/24/97 07:00
Review Delete		Download Session File
Brazil Test		Jun/02/97 12:00
This is to test connectivity with Edmundo, et. a...		Jun/03/97 12:00
Review Delete		Download Session File
CERN - LHC		Jul/10/97 00:00
LARGE HADRON COLLIDER COMMITTEE Session, on Thur...		
Review Delete		Download Session File
CEMIS2, Washington State Departm...		Jun/20/97 00:00

tions. The killer Bs of real-time are bandwidth and burstiness. Insufficient bandwidth can reduce quality to unusable or (if the software can't trade off quality for bit-rates) make the broadcast altogether impossible. Burstiness can also ruin a broadcast — audio becomes unintelligible just by breaking it up into chunks. But this is not exactly multicast's job to solve (though real-time transfer protocol, or RTP, helps a little).

The seminal achievement of multicasting is that if a router has fifty receivers on one side, on network A, and a broadcaster they're interested in is on the other side, on network B, only a single stream of packets needs to be conveyed from network B to A, not fifty. If the receivership increases to fifty thousand, or fifty million, it's still just one stream for any one router. The broadcasting computer is itself a router in this scheme. In fact, it's the router with the most to gain, because it effectively routes (generates) all packets of the broadcast. By the way, the point-to-point connections that take place between web browsers and servers are called *unicasts*. Fifty million unicast connections to a single broadcaster is beyond the capabilities of anything on Earth this millennium.

So multicasting spans the gap between unicasting and broadcasting and is considerably more complicated than either.

Multicasting is based on Class D IP addresses, those in the range 224.x.x.x to 239.x.x.x. Addresses in this range don't represent individual host computers at all, but more like channels or stations. (In contrast, IP addresses from Classes A, B, and C, from 0.x.x.x to 223.x.x.x, are more like phone numbers.) The concept is that a broadcaster transmits packets "to" one of these IP addresses, and receivers "tune into" that IP address, by notifying nearby routers of their desire to receive packets on that channel. Routers propagate that desire upstream to the source.

The 268 million figure comes from the number of Class D addresses (2²⁸). A "program" (technically a multicast group) corresponding to a single Class D address can have audio and video (and possibly many other)

"channels" on separate UDP port numbers. The benefits of multicasting only accrue to the entire program however — if your machine requests one channel, it gets them all.

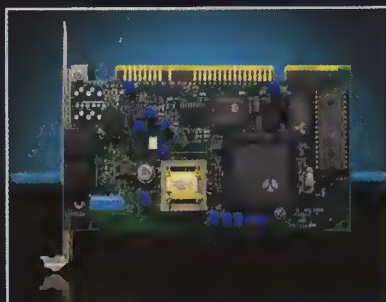
A lot goes into making all this work well, and the dust is by no means settled on all the infrastructure. It's not even settled on the *design* of the infrastructure. That being said, more multicasts are crossing corporate intranets as well as the unwashed Internet all the time. In fact, they have been for over five years.

In March 1992, an audio feed from the IETF meeting was broadcast to 28 remote locations, including points as distant as Sweden and Australia. This was the wired world's first use of the MBone, or multicast backbone, though the name wouldn't be coined for another two months. The MBone is an ingenious system of virtual links or "tunnels" between multicast-capable networks over the multicast-ignorant Internet. Following a long anarchic tradition, the MBone neatly sidestepped the problem

that almost all the routers on the Internet had no clue what to do with a multicast packet. (They still don't, largely.) The MBone was brought up again in July 1992, this time with video, and it's been online continuously ever since. Though conceived experimental, it's still widely used as a broadcast medium with dozens of broadcasts each month (see Precept's program guide, Cilea's session agenda, or MSRI's broadcast schedule) picked up so far on some 30,000 computers in 30 countries.

In May 1996, Hewlett-Packard experimented with multicasting for the semiannual announcement of profit-sharing figures, including a speech by HP chairman Lewis Platt, using IP/TV to view on Windows workstations and Van Jacobson's VIC and VAT for viewing and listening on HP/UX workstations. According to Tim DeLamatre at HP, they used HP workstations running *mrouted*, the multicast-capable routing "daemon" to route the multicast packets. The multicast went to about 300 desktops at ten HP sites around the U.S. Surveys came back from about 100 of the viewers and were very positive: "When can we see more?" While encouraging, 100 yeahs in a company of 100,000 doesn't carry much weight. This was a transition however, from the technology-driven multicast era at HP, "Will this thing work?" to a need-driven era, "What can we do with it?" or better "Who wants this?"

It took almost a year for these questions to start getting answered in earnest. As of the end of 1996, there was a diminishing small demand for multicasting at HP. But by early 1997, that was starting to change, with interest gradually seeping out of the woodwork. DeLamatre attended the multi-



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casting session of the IETF meeting last March. Many HP employees have received multicasts over the MBone.

And the form of the demand was changing. "Folks weren't just asking 'When can we get video over the Internet,' but 'When is multicasting gonna be ready?'" says DeLamatre.

As the demand gradually rises, the deployment-driven era has begun. At this point, network administrators must make sure that multicasts can't cripple their intranets.

PHRASE	SEEKING TO ANSWER
Technology driven	"Will this work?"
Need driven	"Who wants this?"
Deployment driven	"How to begin?"

DeLamatre speculates that the promise of multicast goes beyond video. File transfers and server updates, while far less glamorous, could be highly useful. He also speculates that there is some yet-to-be-invented "killer ap," that could fill a much greater set of needs. He points out the specific applicability of a unicast back channel. Some of the multicasted conferences he's attended have included a 1-800 number for calling in questions, or even an electronic white-board for submitting questions to the speaker. Building this capability into a multicast video viewer has obvious utility for training and presentations.

This highlights the four-way chicken-and-egg dilemma of multicast deployment:

- **Application vendors** waiting for router deployment before starting any serious development.
- **Network administrators** won't invest in new routers or router upgrades with fewer than 0.1 percent of the company asking for it.
- **Potential viewers** are discouraged by the lack of good content.
- **Broadcasters** bemoan the lack of good applications and tools for the projects they have in mind.

Clearly, this is going to take time.

Steve Anthes is program manager of the Worldwide Training group at Cisco Systems. They've been broadcasting live video feeds to Cisco system engineers and account managers around the world every six weeks for about two years now (Cisco TV). This keeps everyone informed about new releases, new products, competitive analyses, and even new acquisitions. About nine months ago, as a logical extension of their training efforts, they started multicasting to sites around the U.S. (Steve says it's still prohibitively expensive to try to send digital video "across the pond" to Europe and Asia.) The viewership is still paltry — only about 10 to 20 multicast viewers on a live multicast, compared with 1,200 to 1,400 viewers of the live video feed.

Steve gives several reasons for the disparity. There are about 70 satellite downlinks world-wide, as compared with only about 24 multicast-enabled HP offices in the U.S. Also, while the multicast viewer feedback is generally very positive, video quality is still much better over the satellite. The complaint heard most often from multicast viewers is, "Can't we get a better frame rate?" But perhaps most importantly, it's far more appealing to join your compatriots in a room for a video feed on a 35-inch monitor than it is to stare at a tiny video

window on your desktop solo. (A lesson not to neglect the high-touch needs of high-tech users.)

The multicast has a few advantages over the satellite broadcast, though. The slide presentations appear on screen next to the live video (a feature Precept calls *Slidecast*), and since these slide images are transmitted digitally, they're much better quality than can be seen through the video broadcasts. But this advantage is a bit thin. The training group has gotten well organized at presentations so that the slide presentation is available well before the broadcast. The people who attend the analog video feeds get the slides on paper to scribble notes and follow along, and they can download the slides from an intranet. The other advantage to multicast is that the broadcasts are repeated daily for up to a week after the live showing. Usership is rather consistently in the 10 to 20 range for these repeat performances.

We've all seen this many times before: new technology re-solving old problems, and doing a disappointing job of it. What's intriguing to imagine are the solutions multicasting offers to problems we don't know we have yet. If multicasting holds no promise beyond reinventing the broadcast networks, and the cable TV networks, there's not much of a point to it. Still, today, when you're multicasting, it's most likely video and audio.

Anthes thinks the interest is keen for more interactivity. The software they use, also IP/TV, already has a question manager for feedback and questions, and Anthes is working on a one-touch keypad response system for quick surveys, votes or pop-quizzes. Also, folks would often like to record a broadcast when they have to step away from their screens.

Anthes stresses, that broadcasting on the Web doesn't happen by itself. Cisco's multicasting projects never would have gotten off the ground without the collaborative efforts of a cross-functional team. The network administrators were always key to success, upgrading and configuring the routers. But new roles, spawned in dire need, eventually integrated into the fabric: a rapid-response team to handle calls from remote corners ("We're not getting anything in Boston"); champions in the field to be the first in their office to bother with setting up and using, and then evangelizing, the new technology. The spirit of teamwork that makes adaptivity like this possible can be hard to find in a big organization, but Anthes stresses that it's essential to the success of multicast deployment at this point in its evolution.

What all this says is that the chickens and eggs may not be quite ready for dinner. If you're the network administrator of a big company with good interdepartmental networking (the human kind as well as the electronic kind) with a steady source of good multimedia programming and a ready audience, then you might be able to pull it off, and make it look slightly more useful than a science fair. On a smaller scale, and other than as a labor of love or a mad scientist experiment, be prepared for disappointment. The bottom-line benefits are still rather slim.

But this could change rapidly in geologic time scales. Looking back at the advent of Mosaic, the first serious graphical browser for the World Wide Web, one might describe it as the introduction of an application into a super-saturated solution of users, information providers, and global, corporate-tolerating TCP/IP Networking. The ensuing chain reaction was brilliant. We could see it again with multicasting.



Sampling of Broadcasts:

- March 1992 — IETF meeting (first MBone broadcast, audio only)
- November 6, 1992 — NPR "Talk of the Nation" about Internet phone, patched to MBone
- June 24, 1993 — Concert by Severe Tire Damage from PARC before Jacobson Forum (first live concert on the MBone)
- August 22-25, 1994 — IEEE ITS'94 International Telecomm. Symposium, Rio de Janeiro
- October 20, 1994 — Announcement of White House WWW server, from the W.H. (failed)
- November 11, 1994 — Minimally Invasive Surgery from Middlesex Hospital, UK (restricted)
- November 18, 1994 — Rolling Stones Live from Dallas (ThinkPix and Sun)
- January 19, 1995 — Live from Antarctica, NASA Select via Ames
- March 9, 1995 — JASON Project (oceanographic visualization) Expedition VI, Island Earth, from Hawaii.
- May 24, 1995 — The Lizards in concert, from DEC SRC
- August 6, 1995 — 50th Hiroshima Peace Memorial Ceremony, in 5 languages
- October 7, 1995 — Ham Radio class, from U Missouri
- November 14, 1995 — Asia Pacific Music Festival, from Osaka
- March 13-14, 1996 — Microsoft Internet developer's conference, from SF via UCB
- March 14, 1996 — Space shuttle mission to repair the Hubble space telescope.
- April 18, 1996 — Robert Devaney, Fractal Geometry of the Mandelbrot Set, U of MO
- June 5, 1996 — Starchild: The Opera, from Georgia Tech
- July 8, 1996 — Pilot's eye view from the NASA Shuttle dashboard

- November 9-12, 1996 — Micro-Robot World Cup Soccer Tournament'96, from KAIST
- February 25, 1997 — Seminar on physics results from the LEP run at 172 GeV, from CERN
- March 3-5, 1997 — ACM '97 (Association of Computing Machinery)
- April 7-11, 1997 — WWW6, Sixth International World Wide Web Conference, Santa Clara
- May 1997 — WGBH broadcast of David Breashears reaching summit of Mt. Everest
- June 30, 1997 — Hong Kong Handover ceremonies, starting 12:00 noon Hong Kong time
- July 10, 1997 — Large Hadron Collider Committee Session
- December 8-12, 1997 — 40th IETF (Internet Engineering Task Force) - Washington, DC

Terminology (including MBAs, MBone acronyms):

- Broadcasting — technically speaking, one to all transmissions on a network, possible on a LAN, never permitted on the Internet. (Analogous to an air-raid siren.) Informally, broadcasting also refers to multicasting.
- Multicasting — one to many transmissions on a network. (Analogous to a radio or TV station.)
- Unicasting — one to one transmissions, as are all connections on the World-Wide Web. (Analogous to telephones.)
- DVMRP: Distance Vector Multicast Routing Protocol. This measures paths between routers so RPF can find the shortest (quickest) one. It is used by mrouted.
- EARTH — easy IP multicast routing through ATM clouds (proposed standard)
- H.261 — Video coding/decoding standard of ITU.
- OSPF — Open Shortest Path First, an IP (Internet Protocol) routing algorithm.
- PIM — protocol independent multicast, a more effective (though as yet less widely used) competitor to DVMRP for determining how to route multicast packets. Handles both "dense" and "sparse" networks well, referring to the density of receivers in any given corner of the Internet or intranet.
- DVMRP and OSPF are less optimal in sparse networks.
- MARS — multicast address resolution server, for multicast over ATM (proposed standard)
- MBone — multicast backbone. A test bed and proving ground for IP Multicast infrastructure and applications, in advance of ubiquitous deployment of multicast routers, it has grown from 40 subnets in 1992 to over 3400 as of March 1997. Scattered multicast-aware networks, that today are joined by multicast-ignorant routers on the wide open Internet, use "tunneling" to exchange their multicast-specific packets. This tunneling technique is the primary distinction of the MBone, which, as the plans go, will one day merge into the Internet. Tunneling may persist in remote corners of the Internet for years.
- MOSPF — Multicast-capable OSPF.
- mrouted — multicast router daemon (server) that allows a UNIX computer to serve as a multicast-capable router.
- RPF — reverse path forwarding. The algorithm used today on the MBone to find the shortest router path between receiver and broadcaster, based on a flood and prune strategy.
- RSVP — Resource Reservation Protocol, prioritizes network traffic, allocating bandwidth among competing real-time broadcasts (proposed standard). Helps broadcasts minimize or control delays (to prevent burstiness). Helps routers predict average and peak bandwidth.

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Products:

- Apple's QuickTime Conferencing software.
- ICAST Express Media, video, audio and text clients and servers, beta version available on request.
- Merit Network's mrouted, multicast router daemon (server).
- Microsoft's NetShow — Windows video/audio client and server. Multicast-capable.
- Precept's IP/TV — Windows client for receiving video/audio/slide broadcasts.
- Van Jacobson's popular multimedia multicasting tools for a UNIX X Window server: video (VIC), and audio (VAT).
- Progressive Networks' RealVideo.

Pioneers:

- Steve Deering, inventor of IP multicast (esp. IGMP and DVMRP), which came out of his doctoral work at Stanford.
- Steve Casner, co-produced (with Deering) first multicast of an IETF meeting in March 1992. Worked on RTP and mtrace. Now a principal with Precept Software, makers of IP/TV and other multicasting products.
- Van Jacobson, developed, with Steve McCanne, the first multicast applications at Lawrence Berkeley Labs: SD, VIC, VAT.
- Judy Estrin, founder and CEO of Precept Software, founder of the IP Multicast Initiative.
- Bill Fenner, Xerox P.A.R.C., helped implement DVMRP for UNIX and wrote multicast-aware traceroute. Apparently, Bill currently serves at the top of the Mbone tunnel administration hierarchy.
- Bob Metcalfe, inventor of Ethernet, with Yogan Dalal, invented RPF, Reverse Path Forwarding, a key technique in MOSPF routing.
- Deborah Estrin author of many multicast routing RFCs, professor at USC shepherding UNIX implementations of RSVP and PIM-SM.
- Dave Thaler, University of Michigan, developer of many useful diagnostic tools: mstat, mrtree, and MVIEW, of MIB's and SNMP support for mrouted.
- Dino Farinacci, author of Cisco's implementation of PIM-SM.

Books:

- *Routing in the Internet*, by Christian Huitema, especially Chapter 11, Multicast.
- *Web Developer's Guide to Multicasting*, by Nels Johnson. Multicastifying your network.
- *TCP/IP Illustrated, Volume 1*, by W. Richard Stevens, Chapters 12 (multicasting) and 13 (IGMP).
- *Mbone: Multicasting Tomorrow's Internet*, by Kevin Savetz, Neil Randall, Yves Lepage.
- *Mbone: Multicast Multimedia for the Internet*, by Vinay Kumar.

Standards:

- RFC 2117: Protocol Independent Multicast-Sparse Mode (PIM-SM), D. Farinacci, A. , D. Thaler, S. g, M. Handley, V. on, C. Liu, P. , L. Wei.
- RFC 1584: Multicast Extensions to OSPF (a.k.a. MOSPF), John Moy. Extends the OSPF Version 2 protocol for routing multicast packets.
- RFC 1889: RTP: A Transport Protocol for Real-Time Applications, H. Schulzrinne, S. Casner, R. Frederick, V. Jacobson.
- RFC 1112: Host Extensions for IP Multicasting, Steve Deering. Also specifies IGMP. This is the foundation of practical multicasting on the Internet, introducing IGMP (Internet Group Management Protocol) the means by which routers inform each other about what multicasts to tune into.
- RFC 1075: DVMRP: Distance Vector Multicast Routing Protocol, D. Waitzman, C. Partridge, S. Deering. An early specification of DVMRP, what's actually used now in multicast router daemons (servers) is more advanced.
- Multicast Debugging Handbook (IETF draft standard — this hyperlink is ephemeral), D. Thaler and B. Aboba, March 26, 1997, expires September 1997. Reviews common problems and references diagnostic tools.

Multicast Web Sites:

- IP Multicast Initiative, www.ipmulticast.com
- Microsoft's extensions to Winsock for multicast programming: <ftp://ftp.microsoft.com/bussys/WinSock/ms-ext/MULTICAST.TXT>
- Permanent multicast group addresses: www.isi.edu:80/in-notes/iana/assignments/multicast-addresses (what's permanent are the address/purpose relationships — membership is always dynamic)

MBone Web Sites:

- Mbone Page, sponsored by ICAST, www.mbone.com. EXCELLENT resource!
- Mbone Deployment Working Group of the IETF: <http://ns.uoregon.edu/~meyer/MBONED>
- What's on the MBone to-nite: Precept's MBone program guide: www.precept.com/cgi-bin/iptv/iptvmain.pl (this month only, most thorough list, updated automatically via multicast)
- Cilea's MBone session agenda: www.cilea.it/MBone/browse.html (history since late '94)
- MSRI's broadcast schedule: www.msri.org/mbone/ (history since '95, overwhelming detail, great for text-searches)
- Joining the MBone: Not an ISP? Call your ISP! Mailing list for ISPs: mbone@isi.edu Access hierarchy: www.mbone.com/mbone/contacts.html



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PROTECTING YOUR NETWORK

Alan Cox is the Technical Director of CymruNet, a leading Internet service provider in Wales, United Kingdom. Cox is also a member of the Linux International Technical Board and the CERT Vendor contact for Linux. He maintains the <http://www.uk.linux.org> web page and leads the Linux Networking Project, the project to port UNIX to shared memory multiprocessor architectures, and a project to port Linux to 8086 embedded controller systems. Send e-mail to alan@cymru.net

It is becoming more and more routine to see reports of major security breaches on the Internet, and of providers' systems brought down by crackers. Many very famous web sites, such as the Justice Department's, have been compromised by crackers and modified in a variety of amusing ways. However amusing as some of these pranks are, they take time to clean up and they lower a provider's credibility with customers. Clearly, it isn't something you want to happen to your own site.

In this article, I will be looking at two techniques that provide the basic protection most people need. First there's firewalling — that is placing a filter between you and the outside world. The second is logging. Without log files, you will never know when someone tries to break in or if they have succeeded. Since no system can ever be totally and utterly secure (at least while remaining useful), the logging is just as important.

FIREWALLS

If all the machines on a network were secure, then nobody would need a firewall. The basic idea of a firewall is to accept that you cannot be sure all your machines are secure and up to date with every security fix. Instead, you wall the network off and put a guard at the door. The firewall serves to protect the other machine by disallowing accesses other than those actually required. Proxy-based firewalls can also protect systems from attacks based upon feeding the system suitable patterns of invalid data via services that you do need to provide.

PACKET FILTERING

Except from unplugging the network, a packet filter is the simplest method for controlling access, and normally completely adequate for the task. A packet filter is a piece of program that takes a packet from the network and applies a set of rules. According to the rules, it will either pass the packet onwards or drop it.

The Linux kernel contains packet filtering for IP traffic. The "ipfwadm" command is used to manipulate the rules and set up the table that protects your machines from outside attack. Setting up a packet filter correctly requires quite a lot of care and awareness of some unsavory surprises. The golden rule of thumb is to block everything, then allow stuff bit by bit. You can be assured people will moan if you block something in error. The reverse will rarely be true.

A simple web server network can often be screened quite simply with rules something like:

```
ipfwadm -F -p deny
ipfwadm -F -f
ipfwadm -F -a accept -P tcp -S 0/0 -D
my.web.servers/24 80 -b
```

The first of these is a policy rule. We tell ipfwadm that for the forwarding filter (-F) that we want a policy (-p) of deny. There are three policies you can set — accept, deny or reject. Accept passes packets onwards by default, and is useful if you want to block a small number of things only. A policy of deny causes the default action to be one of throwing packets on the floor. For most applications this is desirable. Anything you didn't think of disappears and no information or explanation is returned. It is basically as if the machine is not there. Reject is similar to deny but also sends back ICMP (Internet Control Message Protocol) messages to the sender of the packet saying "Yes I am here but you can't come in."

The -F specified the forwarding filter. Linux has three filters and they are applied in the following way.

The incoming filter (-I) is applied to all incoming frames, whoever they are for. Any frame that fails this filter is dropped. This allows you to specify rules affecting yourself as well as other hosts.

Packets to other destinations then pass through the forwarding rules (-F) and may again be dropped by these rules. These rules are being applied only to packets that are for other machines and already pass the input rule.

Finally every outgoing packet is passed through the outgoing rules (-O) and anything that fails is dropped rather than transmitted out onto the network.

So what do the other two lines do? The first flushes the existing table (if any) and removes any existing forwarding rules. The last line adds a rule to allow incoming traffic to port 80 (web traffic). The options given are -F which selects the forwarding list then -a to append an entry to the end of the existing list. TCP specifies the protocol we are concerned with from a choice of tcp,udp,icmp or all. The -S option gives a source. Here we specify an address in address/netmask format. 0/0 may seem an odd address but a netmask of 0 bits means "the whole Internet." We of course want everyone to visit our web site. Next, we specify that the destination this rule applies to is my.web.servers/24 — that is a class C (24bit netmask). In this example, I'm assuming we have an entire 256 address block allocated to the web servers. We follow this with 80, which is the port number we wish to match. This can either be a list of

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port numbers or a range of ports. Finally we specify -b to indicate we want the rule bi-directional (otherwise the web server cannot send traffic back).

So that wasn't too bad and nothing is actually painful except the command syntax. Or is there more to it? Well, yes. This is what I meant about packet filters and awareness of surprises. Wily Hacker can still potentially cause harm (although very little and he would need to be good) because he can generate packets from outside on the Net with a fake source address on my.webservers.net and with a port of 80. That is, he is connecting from port 80 of a machine spoofed to be on our protected network to a host on our protected network. As the packet has an address within my.network.com and port 80 our rule matches and we accept the packet.

It is for this reason that the first rules you want are to block addresses from impossible ranges occurring on other ports. If someone tries to spoof addresses from your network, then you will be spared a lot of grief from other providers. Thus we add:

```
ipfwadm -I -a accept -S my.webserver.net/24
-D 0/0 -W eth0
ipfwadm -I -a deny -S my.webserver.net/24
-D 0/0
```

The first rule says that we can accept any input packet from the my.webserver.net class C, and it adds the new condition -W eth0, which requires the packet arrive on eth0. The second rule blocks any other packets from hosts within my.webserver.net that appear to come from the wrong network. Our hacker now has far more work to do.

Using input filter rules is very good practice. With rules like this filtering your dial-up and customer networks, you are in a position to prevent your customers from causing other providers hard to trace problems with syn bomb attacks and the like. If you put it such filters on your connections to the backbones, then you know packets from your network have an address at least authentic enough to identify its real source network.

Next month, I'll look at a more complex example and how to build packet filter rules that work for a real network.

In the meantime here are a couple of simple recipe blocks that are often useful on your link to the Net.

```
ipfwadm -F -a deny -P tcp -S 0/0 -D my.network/24 6000:6009      # block Xwindows
ipfwadm -F -a deny -P tcp -S 0/0 -D my.network/24 137:139        # block most microsoft SMB (windows
                                                                    # fileshares) from attack
ipfwadm -F -a deny -P udp -S 0/0 -D my.network/24 2049           # block NFS
```

You may need to combine these with specific acceptance rules if you want to run Xwindows or NFS from your firewall (which I wouldn't recommend), and input rules such as those discussed above to stop spoofing of addresses.

PROXY SERVERS

It can be tricky in some cases to filter using only packet filtering rules. A packet filter may also leave a machine open to attack by someone exploiting a bug in a service you need to provide. Proxies act as links between the inside and outside world and tightly control what is passed between the two networks. Many proxy-based security systems pass no packets

directly between the internal and external networks. You can mix this with packet filtering by telling the packet filter to block a given service that is provided by proxy. A proxy system is generally much more intrusive than a packet filter, as it tends not to be transparent.

Several generally useful proxy agents are available for Linux including Apache and Cern HTTP servers (Apache 1.2 also does FTP). A wide range of other proxy agents are available from <ftp://ftp.tis.com> and form the basis of the T|S fwtk (firewall toolkit). Do check the license however. One of the most commonly used web proxies is Squid (<http://squid.nlanr.net/Squid>). This is far more than just a web/FTP/gopher proxy, but is very demanding on resources.

Not all proxies are for security — proxies are often used for performance reasons — especially the web proxies, or sometimes just to filter out rubbish e.g. Junkbuster (www.junkbuster.com).

SECURE SHELL

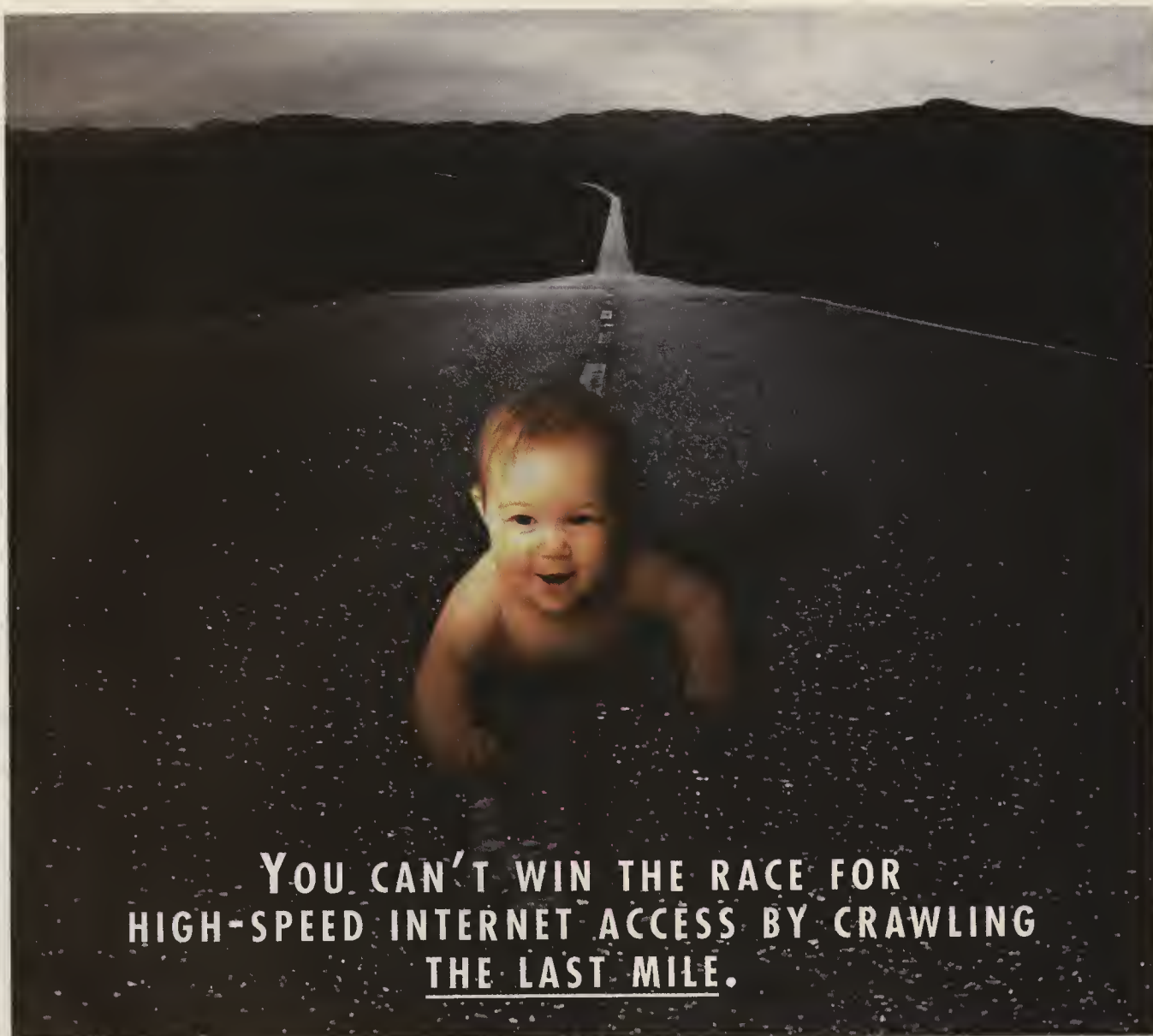
The secure shell is a very valuable weapon in a network administrator's arsenal, although in the United States it is potentially mired in patent problems. It provides strongly encrypted sessions between UNIX boxes. This prevents people with access to the networks from "Sniffing" login and password information for users of your machines by logging sessions as they go past. Anyone with any doubt about the ease with which conventional passwords can be acquired off a network should pick up a copy of sniffit and run it for an hour or two.

Without such tools, all your policy on good passwords is wasted, and you give potential trouble-makers direct access to machines and files they can use to do harm. Security will not help much if the attacker simply logs the user/password of the owner of a web site and then uses it. If the owner is told to use secure shell or other cryptographically strong access systems (such as SSLtelnet) and they choose not to, then it's fairly clear whose fault an attack is. You can pick up ssh from <http://www.cs.hut.fi/ssh>. Commercial versions of it, including U.S. patent licensing and Windows clients are available from Data Fellows. The package is from Europe thus it is not crippled by U.S. export regulations or the current U.S. key recovery (key escrow) systems.

Secure shell and a whole pile of other cryptographic tools are available in RPM form for Linux from <ftp://ftp.replay.com:/pub/replay/pub/redhat>. You will not find them on U.S. sites because of cryptography export laws. Also, because of the patent issues in the U.S., you will find some packages have both a U.S. and an international version. Make sure you get the right RPM files.

LOGGING

Someone who does break into your systems is probably the most dangerous of all. Keeping good log files and scanning them is an important aspect of system security. A standard



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Linux system logs a large number of things to files in /var/log. These are easily erased or modified by a skilled attacker, but they will show failed attacks and other funny goings on as well. Since you ought to be reading these occasionally, it won't take much extra time.

Beyond these basic logs, there are tools designed to spot unauthorized modifications to files. These systems generally rely on cryptographic techniques like MD5 to detect unauthorized tampering.

RPM AND TRIPWIRE

Many Linux distributions use the RPM packaging system. RPM includes several security facilities that are useful in a logging and verification role. If you have installed PGP, then you can perform authentication on the provider of a package. This is invaluable to check if packages are what they seem. It allows you to confirm that the file you pulled off an FTP site has the owner it claims. In particular, vendors sign their packages so you can check that the package you have really is the vendor original.

More importantly, RPM has facilities for verifying that a package is not corrupt or has components missing. A program added by a cracker will not match the original and RPM will generally report a verification failure. Thus, you can use

```
rpm -Va
```

to scan all your packages for tampering. Output like:

```
..5....T /bin/login
```

should sound alarm bells. RPM produces the following useful output fields:

```
S - file size changed M - file mode changed 5
- MD5 checksum failed U - file owner changed G
- group changed
```

The most valuable one is generally the MD5 checksum, a mathematical operation that produces a checksum from a file. It has the additional property that it is extremely hard to find another file with the same MD5 checksum, even if you know the desired checksum.

Some crackers will however install RPM packages with their own alterations or otherwise alter the RPM program and its database. For that reason the more security conscious should keep a copy of RPM and the current RPM database (/var/lib/rpm) on a floppy disk stored away from the machine.

Not everyone has RPM, and many have other UNIX machines to maintain. The verification part of RPM is closely related to a tool called *Tripwire* by Gene Spafford, available from <ftp://ftp.cert.org>. Tripwire performs similar operations on files you wish to verify, although it does stronger checks. Tripwire also provides a valuable general purpose tool to monitor for unauthorized changes.

SECURITY AGENCIES

Networks, governments and other agencies fund several security teams. Most of these operate under the umbrella of FIRST (Forum of Incident Response Teams) [www.first.org]. The most famous is probably CERT which deals with most of the U.S. incidents. Each area tends to have its own organization,

— for example AUSCERT in Australia. The security agencies tend to be very slow and, at times, can be a year or more behind a bug discovery. One big problem they have is that they rely on cooperation with vendors. This can lead to reports being deferred for months while vendors think about fixing the problem. In at least one case they've had a serious bug for over a year and did not distribute any warnings about it.

CERT for all this are well worth checking (www.cert.org). Their FTP site contains a valuable collection of tools and utilities for maintaining system security. They keep archives of their alerts and other related documents, including some good tutorials on recovering from a break-in.

MAILING LISTS

Several mailing lists deal with security and Linux systems. It is probably worth subscribing to either your vendor or the general Linux security list. The interested may find some of these other lists interesting, but somewhat noisy:

Linux-alert — Carries announcements of security problems and vendor updates — this is the “must have” list. It carries no discussion or other traffic and is tightly moderated. To subscribe, MailTo:linux-alert-request@redhat.com. The Red Hat address doesn't mean it is a Red Hat list, they simply host it. An archive can be found at <http://www.redhat.com/linux-info/security/linux-alert>.

Linux-security — Carries on security-related discussions, often related to and following up from Linux-alert topics. This can be quite noisy. Subscription requests go to linux-security-request@redhat.com.

Bugtraq — The raw edge of security. Bugtraq is an all platform list that believes in full disclosure of bugs and exploits. Bugtraq is quite busy and represents the raw end of the security world. If you want to get into security it will teach you a lot. If you want to keep machines secure, then it may not help that much. For subscription information, mail the word “HELP” to listserv@netspace.org.

XFREES86 3.3

XFree86 3.3 has been released. This contains support for a large number of newer cards (Matrox boards being the obvious ones), and 16/24bit color on some ET4000 boards. More importantly, it is based on X11R6.3, which has had a security audit. The audit found a number of potential bugs and holes left in setuid Xwindows applications by bugs in the X11 libraries. The new packages and documentation are available from <ftp://ftp.xfree86.org>, and most distributions have ready packaged updates available.

There are a lot of additions in XFree86 3.3 so do take a good look at the README files before installing.

WINDOWS EMULATORS MERGE

Good Windows emulation took a very large leap forward for a lot of platforms this month. To a very large number of people's surprise, Willows (www.willows.com) placed their toolkit under the LGPL — the GNU public license for libraries. This means the library can be distributed freely, includes source code, and can still be used with commercial applications.

This is very good news for the free software community as Willows already runs some Windows applications, although, perhaps not as well as the free Wine project emulator does


(<http://www.linpro.no/wine>). With the change in licensing, the two projects can merge and the best of both worlds becomes available freely to all. Willows also contains a CPU emulator for the user mode of a 32-bit Intel 386 CPU. This makes it possible to run Windows applications on other platforms, such as the Linux/Sparc platform, and potentially provides the major missing ingredient for running Linux/Intel specific commercial applications (that is most of them) on the Sparc, M68K and other Linux platforms. Currently, this is only possible on the Digital Alpha, using Digital's em86, which includes their 80x86 emulator for the Alpha as a binary object.

The second gain is for people considering Linux ports. The Willows toolkit provides more than emulation (indeed emulation is a side line). It provides the Win16 and partial Win32 APIs under UNIX and MacOS. This means you can now freely port Windows applications to Linux with this toolkit. Hopefully this will make more vendors take a look at Linux ports.

GAME TIME

With your network nicely secure, it's time to relax. My pick for relaxation during the past couple of weeks has been "Craft" (<http://set.gmd.de/~hua>). The author claims it's really an environment for his studies, but it is an excellent game as you strive to build up your little population of Vikings without being wiped out by the computer player. It has a nice multiplayer mode (which is useful when you want to lose to someone other than the very strong computer player). All in all, while quite resource hungry, Craft is a wonderfully playable game.

I think I'd better stop extolling its virtues further in case our beloved editor starts to wonder why this article was so close to the deadlines. ♦



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CONSUMMATE WINSOCK APPS by Forrest Stroud


THE BATTLE OF THE BOOKSELLERS

The applications reviewed here and many more are available at Stroud's Consummate Winsock Apps List, www.stroud.com and <http://cws.internet.com>.

Forrest Stroud currently works in College Station, Texas as a web developer for Mecklermedia Corporation. He recently graduated, with honors, from The University of Texas at Austin. The Information Systems and Data Communications Management major enjoys spending what little free time he has with his wife Joanne and the "zoo" — an ever-expanding collection of dogs and cats that currently consists of a Dalmatian pup (Svoda Pop), a chocolate Lab cross (Roemer), a German Shepherd pup (Marius), and a pair of rascally kittens (Odie Pez and Bo Miggy). Animal lovers can check out pictures of the pets on Stroud's home page at www.tcac.com/~neuroses.

One of the most interesting online battles currently being waged is not between Microsoft and Netscape, but between the David and Goliath of booksellers. The "little guy" is **Amazon.com**, the largest virtual bookstore in the world and a mainstay on the Net for more than two years. Yet despite its credentials, this online superstar still has a lot of ground to cover in the war against its closest competitor: **Barnes & Noble**, the megabookseller with superstores all across the country, is seeking to use the brand loyalty it has achieved in its push onto the Web and its direct assault on Amazon.com's sales. The Barnes & Noble web site was launched only a few weeks ago, and already both booksellers have dramatically lowered their prices. While it's too early to tell who will come out on top, one thing is already quite clear — the outcome of this battle could very likely have a greater impact on the future of the electronic marketplace than will the resolution of the battle of the web browsers. In any case, it's fun just to sit back and watch as the two companies duke it out. And what could be more fun than reeling in the savings that result from the battle itself?

Net.Medic



Desc:	Impressive diagnostic tool that identifies bottle necks and problems on the Net
Pros:	Excellent diagnostic tools, attractive and intuitive interface, easy to use, impressive feature-set
Cons:	Price tag; needs a user tutorial, better help documentation, and an integrated traceroute utility
Location:	ftp://ftp.vitalsigns.com/pub/netmedic/windows
Filename:	nm?? .exe
Status:	Free 30 day evaluation. Shareware - \$49.95
Company:	VitalSigns Software
Website:	http://www.vitalsigns.com

How many times have you tried connecting to a popular web site only to find that it takes forever and a day just to pull up the information? The only thing more frustrating than waiting for a web page to load is not knowing whether the delay you are experiencing is a result of the site itself, the Internet in general, your local provider, or your own computer. While there are many specialized diagnostic tools that focus only on specific segments of your Net connection, there has yet to be a program that covers the entire scope of the personal Internet experience, beginning at your desktop itself and culminating in the web sites that you access. **Net.Medic** is a tool that is

drawing rave reviews across the Net, and for good reason. This consummate Net diagnostic tool does an excellent job of pinpointing where the Internet's bottlenecks are and then revealing this information to you via instrumentation panels. The attractive, high-tech interface presents you with a dashboard of toolbar panels (similar to a car's dashboard of gauges) that display critical statistics and information about your connection. Each panel represents a specific segment of the Internet that can be analyzed to help isolate, diagnose, prescribe, and sometimes even automatically fix the problems that inevitably arise. Each panel can reside with several other Net.Medic panels on the dashboard, or the panel can be set to float by itself on top of your desktop. A third option allows you to lock the panel onto your web browser so that you can view its information while still browsing the Web. A Net.Medic icon also resides in the desktop traybar and graphically signifies the overall status of your connection. As with other Net.Medic functions, the icon flashes green or gray to represent an error-free connection, yellow to signify a minor problem, and red to alert you to severe trouble.

In addition to a ticker bar that reports on the status of your connection and lists any problems that have occurred, nine different panels can be viewed on the dashboard at the same time. The most important Net.Medic panel resides at the top of the dashboard just below the ticker bar and graphically portrays the status at each step of your Net connection. In addition to icons for your computer, modem, and the remote site, this panel also identifies the number of intermediate hops between you and the remote site. The hops are grouped into three major categories — your local provider and its routers, the Internet backbone that your provider connects to, and finally the Internet itself and the routers it uses to deliver your information. Clicking on any of these six core segments brings up a specialized panel that gives in-depth information about that area. For example, the modem panel reveals your modem's maximum baud rate, its current speed and compression rate, its average data transfer speed, and finally, its overall health. The remote site panel, on the other hand, gives the average rate of information served, the time spent delivering information, the current time of delay, and the percentage of delay caused by the site itself as opposed to the percentage caused by general Internet congestion. Whenever trouble arises, you can click on the panel with the problem to receive a diagnosis and general prescription. If the problem is related to your computer or modem, then Net.Medic can often correct it automatically via the Autocure button. Otherwise, if it is a severe emergency, then Net.Medic will allow you to notify the node's administrators or prescribe an alternative solution for you.

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While the panels alone reveal more information about your Internet connection than you'll find anywhere else, Net.Medic's value as a diagnostic tool certainly doesn't end there. Two other major capabilities round out the scope of Net.Medic's set of features. The first is Net.Medic's logging options — the program automatically keeps a log of health-related problems as well as a log of connections made with your Internet provider. Both logs provide insight into minor and severe problems encountered during your current and previous sessions. Clicking on an individual problem will present the same diagnosis and prescription screen that is encountered when clicking on one of the alerts for a Net.Medic panel. The second valuable feature, Net.Medic's reporting capability, provides some of the program's most critical information. Of Net.Medic's six available reports, the two that are most relevant are the Health Summary and the Traffic reports. The Health Summary provides a pie graph that depicts the areas in which most major problems occur. The percentages are split accordingly among the desktop, modem, ISP, intranet, Internet, and remote server segments of your Net connection. Typically, problems most often arise with the remote server. The Traffic Report reveals the average level of traffic per hour for your Internet provider and for the Internet in general. You can use this report to determine when to avoid peak times of use. To get an accurate reading for this and other reports, you will need to first use Net.Medic for an extended period of time so that the program can develop a consistent traffic pattern for your provider and the Net. Overall, at just under \$50, Net.Medic is an essential diagnostic tool for any Net user who has ever experienced the frustration of waiting an eternity for a web page to finish downloading. If you fit into this category (and most of us do), then take heart that your fifty dollars will be well spent in helping to alleviate this aggravating and extremely common problem.

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Designed with the goal of being the world's most powerful 32-bit e-mail client, **Anawave Postmark** is a new application with potential that ultimately outshines the current beta incarnation. Yet, despite still being in beta release, this powerful, young client already sports a feature-set comparable to other high-end commercial mail clients. Spell checking (with support for more than ten different languages), an integrated thesaurus (a feature absent in nearly every other mail client), inline HTML and RTF support, import capabilities for Eudora mail folders and address books, pager support, multiple signatures, advanced inbound and outbound message filtering capabilities (with a unique and helpful Filter Wizard), drag and drop for attachments, full hypertext capabilities, color-coding for prioritizing messages, customizable toolbars, multiple sorting options, sound and multimedia effects (including cute graphical "smileys"), and customizable interface themes high-

light Postmark's impressive collection of features. Postmark users will also enjoy a user-friendly, attractive interface as well as excellent support for multiple accounts. In fact, Postmark can already lay claim to being one of the best e-mail apps available for users working with more than one mail account. And at just under **\$30**, Postmark sets the standard for commercial mail clients that maximize power at a sensible price.

Postmark's best features are its filtering, mail attachment, and customization capabilities. The Filter Wizard takes you step by step through the process of automatically sorting mail into designated folders, color-coding important messages, deleting junk mail, playing sounds when specific messages arrive, forwarding your messages to another account, and even routing mail to your digital pager (with support for more than 15 pager services). Postmark allows you to filter both incoming and outgoing mail based on up to six fields. It also gives you the ability to add multiple rules based on Boolean operations. The only feature that could make Postmark's filtering capabilities better than they already are would be an auto-response option — an option that is sure to be included in the official release of the client. Attaching files, pictures, sound bytes, and similar objects using Postmark is a simple drag and drop affair that automatically handles the encoding format (MIME, UUencode/UUdecode, or Base64) for you. And like the mail clients included in the latest versions of Netscape and Internet Explorer, Postmark allows for inline viewing of web and rich text formatted messages — no external decoding is necessary. There are few mail clients currently available that allow users to customize their toolbars and fewer still that can match the capabilities of Postmark. Users can pick and choose from a great-looking selection of icons and apply their selections to each major section of the Postmark interface. The toolbar feature also allows you to determine the size and location of specific icons.

The Postmark interface shows signs of becoming another of the client's strong points, but the beta release does currently lack some essential elements. User themes allow you to customize the background images, sounds, colors, fonts, and layout of the interface (similar to Quicken 6.0 and, to a lesser degree, E-Mail Connection). But with only four default themes and restrictions on the types of changes that can currently be made, this feature is only minimally supported in the current beta version. As a result, look for the customizable interface capabilities of Postmark to become much stronger as the date of the official release draws near. There are also some additional features missing that you would expect to find in a client of Postmark's caliber, but most of these omissions can be attributed more to Postmark's beta status than to a lack of foresight by its developers. In addition to the absent auto-response capabilities, Postmark lacks a quick and efficient way for emptying the trash (deleting old messages), right-mouse button functionality in several critical areas, and efficient background message polling relative to the competition. It would also be more intuitive if Postmark automatically opened your Inbox with the arrival of new mail, thereby saving you a needless step each time new messages are received. Despite these minor limitations, Postmark is far and away one of the best commercial mail clients to arrive on the Net in a long time. With the perfect combination of power, ease of use, and flexibility, Postmark is a real joy to use. And thanks to a surprisingly inexpensive price tag, Postmark is already far and away the best value in its category.

While RealAudio has long held the pole position for high-quality audio on-demand streaming, a new challenger has recently emerged that gives the current champ a run for its money. **Audioactive** uses MPEG audio encoding to compress sound

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bytes down to less than 10 percent of their original size while still retaining an extremely high level of quality. The result is an impressive real-time audio streaming client that rivals earlier versions of RealAudio and even gives the new commercial RealPlayer Plus a run for its money. And though the best audio quality can only be achieved with an ISDN line or better, even at 28.8 Kbps the sound quality is quite amazing. One of my favorite radio stations, Dallas' KDGE 94.5 (The Edge), is one of the many stations that currently provides Audioactive content through the Web. Who would have ever thought that listening to a radio station on the Web could sound as good as the real thing — even with a slow modem connection! Audioactive requires at minimum a 486/66 for real-time playback, but you will need a 90 MHz Pentium or better for the player to be able to decode and play sound files in the background while you work on other projects. At this early stage, Audioactive does not have as large a following as RealPlayer, but the content providers that do serve Audioactive files offer extensive selections of music. A full listing of providers is available at www.audioactive.com/listen/index.htm and includes the likes of SuperRadio, Wild FM, WCSB, WRCT Pittsburgh, The Edge, and the Macintosh.Music scene.

Audioactive





Desc: High-quality, real-time audio on-demand streaming for the Web

Pros: Outstanding real-time audio streaming capabilities, excellent quality even with a slow connection

Cons: No plug-in version, lacks video on-demand capabilities, expensive server costs

Location: http://www.audioactive.com/download/ins_aa32.exe

Status: Freeware


Company: Telos Systems


Website: <http://www.audioactive.com>

As with RealAudio, you can set your company up to serve Audioactive content by purchasing an Audioactive Internet audio encoder and server. The encoder supports adjustable bit-rate capabilities, which allows sites to offer multiple audio sources at different bit-stream rates. For example, a site could offer 28.8 Kbps users one type of audio stream, another type for ISDN users, and yet another for those who have fast Internet connections. The only downside is that while the cost of a RealAudio server ranges from \$300 and up, the price of a single Audioactive server starts quite a bit higher at just under \$10,000. The freeware player client also has a couple of negative aspects that keep the Audioactive system from being more competitive. First, it lacks RealAudio's plug-in and inline web capabilities; Audioactive currently functions only as a web helper application. Second, Audioactive is an audio-only application, meaning that it lacks the video on-demand capabilities of clients like RealPlayer, Streamworks, and VDOLive. Finally, since the Audioactive specification is so new, you won't be able to find as many types of sound bytes for the player as you currently can for similar clients like RealAudio. Still, when it comes to listening to a radio station on the Web or when you're just looking for great sound quality in real time, Audioactive may well be your best bet.

The latest release from Anawave Software is an intelligent agent offline browser designed to help you pull information

Anawave WebSnake





Desc: A 32-bit intelligent agent that offers more than just offline browsing

Pros: Quick, easy to use client; great selection of features for searching and downloading web sites

Cons: Lacks several of Teleport Pro's advanced features, price tag relative to the competition

Location: <ftp://ftp01.anawave.com/pub>

Filename: `snk?????.exe`

Status: Free 30 day evaluation. Commercialware - \$49.95

Company: Anawave Software, Inc.

Website: <http://www.anawave.com/websnake>

from web sites without incurring large connection bills and expending valuable time and effort. WebSnake offers a set of features very similar to its closest competitor, Tennyson Maxwell's Teleport Pro. Like Teleport Pro, WebSnake offers six major functions, each of which can be launched with a Project Wizard that guides you through the function's entire process. As with other offline browsers, WebSnake allows you to download entire web sites and then view them at a later time. However, unlike most of its competition, WebSnake goes far beyond this single task. Using intelligent pull technology, WebSnake can help you search for specific keywords on a web site, almost like having your own personal web search engine for a site (only slower than normal). This function is most useful when you need to search web sites that lack their own search engines. You can also use WebSnake to retrieve specific types of files using intelligent filters. This function allows you to grab all the graphics, movies, sound bytes, or specific web pages from a web site. WebSnake can also provide users with the structure of a remote web site by building a map of the site's HTML file references. The resulting map gives users an overview of the web site's structure in a tree format.

Another cool feature in WebSnake is its ability to mirror a web site with the complete directory structure intact. Unfortunately, as with Teleport Pro, WebSnake doesn't allow you to check web sites for revised information and then download only the files or documents that are more recent than the ones stored on your local site. Such a feature would allow you to synchronize mirror sites in a more efficient fashion. WebSnake's final major function, and perhaps its most controversial feature, is the ability to pull all the e-mail addresses found in a web site and export them into a comma or tab delimited database text file. This gives users the ability to quickly collect addresses for mass e-mail marketing letters as well as for other less intrusive applications. Complementing the major functions are a wealth of helpful features including built-in FTP support (a feature absent in Teleport Pro and most other competing products), smart search querying, advanced scheduling capabilities, HTTP/FTP password and proxy/firewall support, extensive help and tutorials, and advanced multi-threading capabilities (with support for a maximum of 64 concurrent threads). WebSnake does lack features like Teleport Pro's Domain Dispersed Querying and Server Overload Protection, but otherwise it competes with Teleport Pro on a feature for feature basis and manages to hold its own. Still, with a price tag of just under \$50 (compared to Teleport Pro at \$40), WebSnake narrowly loses the overall battle...for now at least. ♦

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TUCOWS

Scott Swedorski

PRIVACY HOLES

Scott Swedorski is president and founder of TUCOWS, The Ultimate Collection of Winsock Software. He lives in Flint, Michigan with his wife, Vicky and 2 daughters, Emily and Ashley. After joining the army at the tender age of 17, Scott received his degree in Computer Information Systems from Mott College, and received an Honorable Discharge after 8 years service. Scott welcomes input from Internet users and software developers at tucows.com.

While debate rages about the safety of the Internet for online shopping and browsing, both Netscape and Microsoft have taken black eyes recently in the press for so-called "privacy holes" in their browsers. Fans of each browser argued about which bug was "worse," while the vast majority of Internet users simply scratched their heads in confusion and waited for the upgrades. The truth is that these bugs are difficult to exploit, and there is no real evidence, so far, that anyone has been victimized by an unauthorized entry into their computers.

There are easier ways for snoopery web masters and others to invade your privacy. In the face of potential government intervention, Netscape and Microsoft are finally double-teaming to give Internet users the ability to refuse Internet "cookies" — snippets of code that tell the web master a variety of details about you from information stored in your browser. At the moment, all you can do is set your browser to notify you so that you can manually decline cookies, unless you have Windows 95. There is one program available that helps you manage cookies:

Cookie Pal for Windows 95

Version Number:	1.0b
Revision Date:	April 24, 1997
Byte Size:	178,685
Author:	Kookaburra Software
License:	Shareware
HomePage:	http://www.kburra.com

Cookie Pal is a complete Internet cookie management system for Windows 95 and Windows NT 4.0. It allows you to automatically accept and reject cookies from all, or user-specified, web sites, without having to click on those annoying "Cookie Alert" messages. The benefit of Cookie Pal is that it lets you choose to accept cookies where you actually want to use them — at a secured server for example — while, at the click of a button, choosing to automatically reject them from others. Cookie Pal tracks the current session, telling you which sites are requesting cookies, and can be easily modified if your preferences change. The registration price of \$15 is a small price to pay for simplicity.



OTHER SECURITY/PRIVACY APPLICATIONS

The most secure browser in the world will not protect you from the vast majority of cyber-snooping. Most invasion of private data takes place at home, or on a workstation at a busy office. Co-workers, family members and roommates make up the majority of so-called "hackers," mainly because they have ready access to your computer.

Security applications keep snoops out of your files by encoding your files with password protection so that only you or another authorized user can read them. The quality of security software varies, depending on the complexity of their encryption coding.

Many security applications are "front-ends" for use with the freeware program called *Pretty Good Privacy* (PGP). Most *Boardwatch* readers will be familiar with PGP. It allows you to encrypt a file to a person's "public key" yet only they are able to decrypt the file, thus eliminating the need to securely trade passwords. The problem with PGP is it tends to be a bit arcane to the beginner, and its encryption is so good that distribution is restricted. In the United States and Canada it can be obtained at: <http://web.mit.edu/network/pgp.html>.

There are other encryption programs available that are a bit more user-friendly. Programs like DataSafe make use of other encryption coding, which does use public key protocols. These programs require users to trade passwords privately.

DataSafe for Windows 95

Version Number:	1.212
Revision Date:	June 14, 1997
File Name:	ds_32bit.exe
Byte Size:	1,421,653
License:	Shareware
Author:	Authentex Software Corporation
HomePage:	http://www.authentex.com

DataSafe is a conventional encryption program with an easy-to-use visual interface that looks, acts, and sounds like a combination safe. It compresses files while encrypting them with the Blowfish 16-pass block encryption algorithm. DataSafe has the ability to make self-extracting and encrypted files, so you can send the encrypted files via the Internet without having to worry if the receiver has a copy of DataSafe. The interface is very simple to use; drag and drop your files into the open safe, close the safe, and set your

combination. DataSafe stores and compresses any data files, and offers thumbnails of graphic images — a handy feature for archiving collections of pictures or graphics. DataSafe also stores past combinations with an associated “memory jogger.” Beta Version 2.0 is in the works, which will add virus-checking, integration with Microsoft Exchange, and other features.



Zip It Up Instead

The simplest way to encrypt a document, and to compress it at the same time, is to use an archive utility that supports PKZIP. Files in Zip and ARJ archives can be password protected. However, this may provide an uncertain level of protection. The most famous, and arguably the simplest archive utility for Windows, is WinZip.

WinZip for Windows 95

Version Number:	6.3 Beta 3
Revision Date:	June 10, 1997
Byte Size:	705,536
License:	Shareware
Author:	Niko Mak Computing
HomePage:	http://www.winzip.com
Also Available:	Windows 3.x Version

WinZip has an easy-to-use and fairly configurable interface that works fast, and even adds items to the right-click menu. It offers two interfaces, a classic Explorer-like interface that supports drag and drop, and a “Wizard” that takes you through the process step-by-step. You can quickly and easily associate WinZip with archives, integrate it with Explorer or File Manager, and launch some installation applications from within WinZip without first expanding the archive.



Lock it ... then Hide it

Magic Folders for Windows 95

Version Number:	97.06a
Revision Date:	June 19, 1997
Byte Size:	110,583
License:	Shareware
Author:	RSE Software
HomePage:	http://www.pc-magic.com

What have you got to hide? Incriminating photos, your diary, embarrassingly bad poetry? In addition to encrypting sensitive files, you can also hide them from view. Hide the folders from Explorer and even DOS with Magic Folders. From the simple interface, you can even rename the executable so as to hide it from attention, and set up multiple password-protected accounts.



Keep Out! for Macintosh

Version Number:	1.1.1
Revision Date:	January 12, 1997
Byte Size:	125,927
License:	Shareware
Author:	Stuart Snaddon
HomePage:	http://www.dcs.gla.ac.uk/~snaddosg/index.html

Keep Out! is a simple, user-friendly login system whereby only “registered users” can gain access to your Mac. Under normal circumstances, each time your Mac starts up, Finder is launched. Keep Out! launches its own startup program and hides Finder. Every time the computer is turned on, a record is made of the user who logged in, when they logged in, etc. You don’t need to keep the program’s control panel in the system folder. You can place it on a floppy disk, which you can hide somewhere safe and makes tampering that much more difficult.



Internet users have a variety of options to keep their private information safe while browsing. Of course, the simplest way is to store truly confidential data on a computer that is not connected to the Internet, or on disks or other forms of storage that can be disconnected from the computer before you go out to surf. ♦

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ISP\$ MARKET REPORT

Paul Stapleton

FIVE TOPICS TO THINK ABOUT THIS SUMMER FOR ISPCON

This month is ISPCON in San Francisco. I hope to meet many of you and have some interesting conversations.... and maybe a beer or two.

So this month's column is about some of the bigger strategic issues that can impact ISP valuation, rather than the specifics and analysis of a recent SEC filing.

Here are some ideas that might provide some topics for conversation. Since I did not think all these things up myself, where possible, I cite some books that have influenced my thinking or at least provided some data for ammunition.

Topic #1: The Economics of Networks Are Often Counterintuitive

For example adding a fourth node to a system that already has three nodes actually reduces the length of line needed to connect all the nodes, provided you place the fourth node in the center of the original three and pass all the lines through it. Add a POP and shorten the T-1s needed. Draw it if you do not believe me.

But, what happens if you add a fifth node? (Hint, this is not linear. You are looking for an "efficiency curve.")

Similarly odd, in 1968 Dietrich Braess of Germany proved that adding lines to a congested network can reduce its overall flow. Given multiple and conflicting objectives, which is a typical scenario in network design, one has to evaluate trade-offs. This the Pareto Optimality Principle.

For more information about these ideas, pick up an operations research book like *Introduction to Management Science*, by Thomas M. Cook and Robert A. Russell. Or for something less dry and formulaic, Kevin Kelly's *Out of Control* is a good overview. The web site <http://raven.stern.nyu.edu/networks> has some good stuff too.

Topic #2: There Is No Magic Price per Subscriber

One cannot take the number of subscribers and multiply by an industry-wide golden number to determine what a business is worth. I have said this in the column, in the e-mail, on the phone, in the newsletter, *ad infinitum* ... but let me say it again.

It is a worthwhile metric to look at, but it is not the only one. This mantra comes from cable industry financial models where it was often misused. Cable is similar in many ways because it's a subscription business within a "community." *Entertainment Industry Economics: A Guide for Financial Analysis, Third Edition*, by Harold L. Vogel, a long time Wall Street analyst has a good chapter on cable system valuation. Much of it can be extended to ISP valuation. Vogel points out that, "although transfer prices are popularly and casually measured in terms of price per subscriber, this measure can be misleading." Some factors that ought to be considered when making comparisons on the basis of per subscriber averages are the following: long-term interest rates, new household formation, demographics, franchise agreements, quality of off-the-air signals (read *wireless*), physical plant, prospects for changes in government regulation, and probability of telco competition.

These factors vary even more wildly among ISPs than among cable system operators. So for me, all the above goes double.

Topic #3: There Are No Economies of Scale

Economies of scale are what big companies say to little ones to scare them. I can get into the ISP business by spending mid-five figures and learning the craft. I can grow modularly. I can outsource just about the entire operation. Someone please tell where the long-term economies of scale are. This is true in every industry, except in semi-conductor manufacturing where the price of a facility keeps going up. (I do not understand why.) Steel mills, icons of the capital-intensive, industrial revolution, are certainly, smaller and cheaper than ever.

For some background on the move back to a craftsman's world, read *The Second Industrial Divide* by Michael J. Piore and Charles F. Sabel or the more popular *Liberation Management* by Tom Peters.

Topic #4: Isn't There a "Moore's Law" for the Net?

From outer space, the Net probably looks like a semiconductor wafer.

Flat-rate pricing is here to stay, so you can use it in your financial modeling. The market wants it. Network economics says it is a sustainable cost structure. If anything, you might want to do some modeling that lowers the flat rate over several years

After bouncing back and forth between finance, publishing and the Internet, Paul Stapleton has landed squarely in the middle. He is Managing Director of Stapleton & Associates, an Internet focused financial consulting firm. Clients include major players as well as start ups and middle market companies in media, telecomm and software.

Paul Stapleton is also editor of *ISP Report* (to subscribe, e-mail ispreport@mediabiz.com or call 303-271-9960 or fax 303-271-9965; annual rate is \$195; sample issue sent on request) the newsletter of record for financial activity in the ISP industry. Paul welcomes comments and suggestions at paulstapes@aol.com. He lives in Boulder, CO with his lovely new bride.



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INTERNET STOCK PERFORMANCE/MARKET CAPITALIZATION

Symbol	Exchange	Company	Price 5/1/97	Price 6/11/97	Price 7/10/97	Monthly Price Change	Market Capitalization
AOL	NYSE	America Online	\$47.63	\$59.38	\$68.69	15.68%	\$6,584.49
CSRV	NASD	CompuServe	\$ 9.38	\$10.63	\$11.75	10.54%	\$1,088.05
ELNK	NASD	Earthlink Network	\$ 8.63	\$13.38	\$12.88	-3.77%	\$ 124.58
IDTC	NASD	IDT Corporation	\$ 5.75	\$ 8.50	\$ 8.13	-4.41%	\$ 80.36
WWW	TSE	iSTAR Internet	\$ 1.51	\$ 1.55	\$ 2.30	48.34%	\$ 56.17
MSPG	NASD	MindSpring Enterprises	\$ 8.13	\$ 9.88	\$12.88	30.31%	\$ 96.27
NETC	NASD	NETCOM	\$10.63	\$15.31	\$13.13	-14.27%	\$ 153.34
OZEMY	NASD	OzEmail Ltd.	\$ 6.44	\$ 8.13	\$ 7.25	-10.82%	\$ 73.95
PSIX	NASD	PSINet	\$ 6.13	\$ 8.94	\$ 7.38	-17.51%	\$ 297.02
RMII	NASD	Rocky Mountain Internet	\$ 2.25	\$ 2.81	\$ 2.50	-11.03%	\$ 11.62
INDUSTRY AVERAGE			\$10.65	\$13.85	\$13.95		TOTAL \$8,655.99

Source: *ISP Report*, Stapleton & Associates, company press releases and financial statements

toward zero. Don't move faster than the market. You do not want to leave bread crumbs on the table. The area under the falling price curve is revenue.

In the July 7, 1997 issue of *Forbes*, Nicholas Negroponte said, "People thought it was a bad idea for AOL to offer unlimited usage for \$20. Wait until AOL has to pay you \$20 to use it! Why not? The more hits they get, the more advertising they will attract."

I keep seeing initial announcements about free Internet access services. I have not seen much follow up. The initial inquiries probably give them a baptism by fire from which they can't recover. I believe those ventures are launching the wrong way. They are trying to build an advertising revenue stream, based on banner advertising, while paying the expenses of running a full Internet operation. That means they have deep pockets and strong stomachs.

On the other hand, the free e-mail services, Juno and Hotmail, each have over a million subscribers. What do you think their next product offering will look like after they have a sustainable, free e-mail business? How about free web access? True, network resources to provide e-mail are lower, but processing

and transmission costs keep coming down. It is one of the only things we can count on.

Topic #5: Regulation is Coming

So far, government has sent some strange signals. Clinton wanted to regulate extreme free speech, but the Supreme Court said he could not. Now he wants to regulate encryption. What he is really saying is, we need to protect the tax base. With encryption, one cannot track money flows. Is that encrypted piece of data going from New York to the Grand Caymans a travel reservation or several million dollars?

If only to protect the tax base, the government will try to regulate the Internet. Some attempts will be silly. Recently, an unnamed Arizona senator introduced a bill to regulate gambling on the Net. (Note, gambling is the same as tax revenue for most states.) He said, since off-shore gambling is legal, the U.S. would have to stop it at the borders by making the ISPs check what was coming in. Huh?

For a historical review of how government has wrestled with the regulation of emerging technologies, skim through

Prophets of Regulation by Thomas K. McCraw. It profiles Charles F. Adams' regulation of the railroads so they would stop crashing, Louis D. Brandeis and the creation of the FTC, James M. Landis and the start of the SEC and Alfred E. Kahn's time on the Civil Aeronautics Board. They were relatively free market guys. If you still think we do not need rules on the Net, I recommend the science fiction novel *Snow Crash* by Neal Stephenson. It is, among other things, a story of what can happen in a world where governments lose the ability to maintain a tax base because of the Net. Even pizza delivery can become unreliable.

Well, the above sounds like something to talk about. See you at the show. ♦

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GRIC simplifies settlement and collections.

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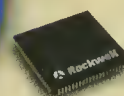
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Rudolph J. Geist is a telecommunications attorney with the Washington DC firm of Wilkes, Artis, Hedrick & Lane specializing in and helping to develop the area of Internet law. Mr. Geist represents ISPs in numerous matters, including relations with other telecommunications providers, consultation regarding federal telecommunications grant programs, federal, state and local taxation issues, First Amendment issues, domain name and IP address allocation issues, and mergers and acquisitions. He also serves as counsel to the United States Internet Providers Association (USIPA), a national trade association established to facilitate fair government and telecommunications industry policies for ISPs. Mr. Geist can be contacted via e-mail at rgeist@wahl.com, telephone at (202) 457-7345, or through USIPA's World Wide Web site at www.usipa.org.

POLICY FORUM

Rudolph J. Geist

HAS THE TELECOM ACT BACKFIRED? WHAT DOES THIS MEAN FOR ISPs?

The Telecommunications Act of 1996 was passed under the assumption that monopoly barriers to competition in the domestic telecommunications industry would be broken down. During the years leading to the passage of the Act, numerous sessions of congress considered versions of telecommunications legislation designed to overhaul the rules of the telecommunications industry. Each version of legislation proposed, whether Republican or Democrat, focused on the specific aim to tear down artificial and protective regulatory barriers to competition and create a framework whereby competition, rather than regulation, would be the determining factor in the provision of services to the public. The intent of congress seemed clear.

The passage of the 1996 Act was supposed to represent the ultimate resolution of these issues in favor of competition in the telecommunications industry. It was especially intended to facilitate new businesses and technologies in the telecommunications industry, and provide substantial new opportunities for emerging entities such as ISPs. In crafting the Act's provisions, congress foresaw long-distance companies and cable companies competing with local carriers; local carriers competing with long-distance and cable companies; and local carriers competing with each other to open up local telephone bottlenecks nationwide. While some competition is currently forcing open age-old monopoly telecommunications markets, there is a growing concern on the part of some government regulators that the Telecommunications Act of 1996 may backfire.

The year since the passage of the 1996 Act has witnessed a number of mergers, announcements, or rumors of mergers between some of the largest telecommunications companies. For example, Pacific Telesis has merged with SBC (formerly Southwestern Bell Corporation), Bell Atlantic is merging with NYNEX, and until FCC Chairman Reed Hundt's "cold water" remarks, there was talk of AT&T merging with SBC. Questions are now being raised whether this degree of merger activity was actually contemplated by the Act, and whether it will indeed spur the competitive marketplace that the Act clearly called for. Indeed, during the debates leading up to passage of the Act, there was not much discussion about the potential for mergers.

The Internet was already well into its commercialization before the passage of the Telecommunications Act in January 1996. Most of this commercialization depended on Internet providers obtaining access to customers on local telephone networks. To date, this has been done by ISPs to a very large degree through the provision of local exchange carrier switched-circuit telephony at intrastate tariffed business line rates. It is for this reason that ISPs, as substantial users of local

telecommunications services, have a significant interest in the development of competition in local markets.

The demand for Internet service has led to the development of a diversified ISP industry of about 4,000 ISPs in the United States over the past few years. Very few of these providers actually own telecommunications facilities. Thus, they must rely on existing interexchange and local facilities-based carriers to lease lines and construct the networks necessary to reach customers. The demand for new fiber optic capacity and other new telecommunications services created by the ISPs has indeed spurred some competition in local markets. Competitive local exchange carriers (CLECs) are popping up, mainly in the largest urban markets, to compete with existing local telephone carriers for the business of ISPs.

The CLECs, which have emerged since the passage of the 1996 Act, range from the largest long-distance carriers such as AT&T and MCI, to competitive access providers such as the former MFS (which was bought by WorldCom) and former Eastern Telelogic (which was bought by Teleport Communications Group), to cable companies, to independent local exchange carriers, such as United Telephone and C-TEC, who are now permitted to go out-of-territory and compete with the RBOCs and GTE. Although some CLECs existed before the passage of the Act, it was only over the past year or so that, as a result of a number of expanded interconnection rights, measurable competition began to occur. The number of interconnection agreements now stands at about 600 nationwide. In some states there are 20 to 30 different CLECs now competing for business.

CLECs obtain access to the existing local exchange facilities to interconnect their equipment and purchase unbundled local loop elements for resale to potential customers. Many CLECs have constructed very extensive fiber optic networks that they interconnect with the largest established local carrier networks. The thriving and rapidly growing ISP market has been a logical focus for many of these CLECs. They have generated substantial business serving the ISPs, who, in most local markets, desire an alternative choice to the established local exchange carriers. Not only have CLECs created some measurable competition in local markets, helping to drive down prices on services making market entry much easier for ISPs, but they have also made available some highly advanced service offerings for ISPs, such as call center aggregation and SONET redundancy. CLECs have also spurred some competition in local markets for local exchange and long-distance business voice services. However, thus far they have had no measurable impact on the residential voice market.

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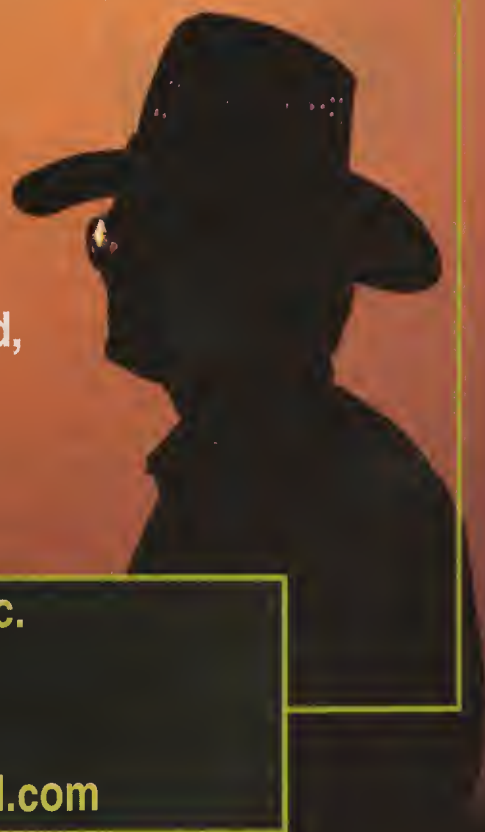
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Just when it has appeared that some facilities-based competitors are emerging — which is good for ISPs because this competition drives the development of more advanced network technology at lower prices — the concern is being expressed that the fully competitive marketplace envisioned by the 1996 Act may not be developing. Congress designed the Telecommunications Act of 1996 to provide a framework to permit local carriers to enter each other's territories and compete, and to give long-distance carriers the ability to enter local markets. However, instead of these carriers entering each other's markets and competing as CLECs, the pronounced tendency seems to be toward mergers.

If the competitive marketplace contemplated by the framers of the 1996 Act does not come to fruition, this will create substantial problems for ISPs, who need to have access to more alternative carriers in local markets from which to buy the advanced network elements necessary in providing Internet access service to their customers. If, instead of merging their operations, the largest carriers were entering each other's markets and competing head-on, surely more advanced local services would sooner be made available to ISPs, and at lower costs. With the opposite happening, regulators fear that the competition envisioned by the Act, and the benefits of that competition to entities such as ISPs may be severely stifled.

Of even more concern to regulators is what could potentially result from a merger of the largest long-distance carrier with any of the other largest established local carriers. Although it has been announced that talks between AT&T and SBC have discontinued, the consequences of an AT&T merger with any of the largest local carriers could be severe for competition in the telecommunications industry. AT&T currently controls about 70 percent of the residential long-distance market in the U.S., along with 40 percent of the business long-distance market. Of course,

each of the largest established local carriers controls nearly 100 percent of both the local residential and business telephone market in their respective territories. If AT&T merged with an established local carrier, the resulting entity could potentially have nearly complete control over both the local and long-distance residential telephone service market in that geographic region.

Regulators believe this type of merger would have a much more severe negative impact on competition than the merger of two local companies. They also believe that congress did not envision this type of merger under the Telecommunications Act of 1996, where the intent was that the largest companies would compete head-on. Indeed, the high degree of market concentration that could result from an AT&T/SBC type merger was the reason the AT&T/ Bell System monopoly was broken up in 1982.

At the time the Telecommunications Act was passed, before any of the mergers, it looked as though the Act would result in substantial competition among existing carriers. It also appeared that ISPs would have very attractive new alternative carriers from which to buy services, versus remaining captive customers paying set prices. Now, as the concentration of the largest carriers is just beginning, the future possibilities for the creation of that competition does not appear so promising.

What are government regulators doing to address these issues? The Federal Communications Commission has not taken any action to block any of the mergers. However, FCC Chairman, Reed Hundt, who will soon be replaced, has recently stated that an AT&T/SBC merger would be "unthinkable." In reaching this conclusion, the Chairman relied on his experience as an antitrust lawyer. He said that the merger of the largest LEC with the largest long-distance company in the United States would never pass the muster of the antitrust laws.

Congress has been a bit more active on whether the Telecommunications Act of 1996 is working as envisioned to create more competitive local telecommunications marketplaces. Alarmed by increased prices in both the telephone and cable industries since the passage of the Act, Senate Committee on Commerce Chairman John McCain (R-AZ) has already held congressional hearings to investigate whether the Act has been working as intended. There is also concern by some members of congress about the concentration developing in the industry. In response to the large LEC mergers and the discussions between SBC and AT&T about a potential merger, Senator Bob Kerry (D-NE), on June 24, introduced legislation that would require the Justice Department to make a finding that a merger between two large telephone companies would "significantly enhance competition" before the merger could be approved. If passed, this legislation would implement a very tough standard that merging telecommunications companies would have to meet. To date, no similar legislation has been introduced in the House.

It may take a few more mergers before more substantial alarm bells ring throughout the government, signaling that the Telecommunications Act of 1996 may be having the opposite effect than what was intended. For ISPs, hopefully more measurable competition will develop in local markets with the emergence of a larger number of stronger and more competitive CLECs. This is indeed the type of competition upon which the Act was premised. This competition drives the development of more cost-effective and advanced telecommunications services, which in turn, drives the further entry of new competitors. ISPs must hope that the Telecommunications Act really does what it was established to do. Otherwise, ISPs will continue to have no other options than a single carrier from which to buy their services. ♦

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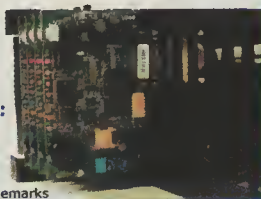
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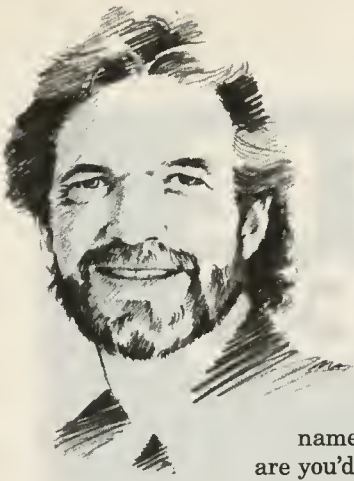
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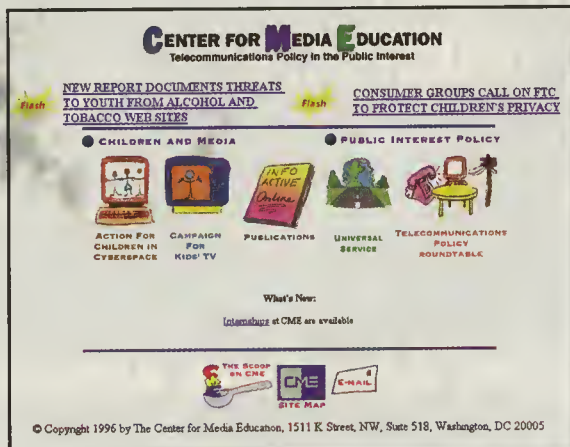
WEB SURVEY FORMS ON KID SITES HAVE CONSUMER GROUPS STEAMING

If a stranger came to your home and asked your six-year-old for her name, address and phone number, chances are you'd want to know who's asking and why.

A coalition of consumer groups say the same thing is happening online when youngsters visit many of the child-oriented web sites sponsored by consumer product companies. Too often, they say, kids are asked to share personal information about themselves, their families and their friends without getting their parents' permission.

To the companies, the practice might not seem very different from mail-in forms in magazines and on cereal boxes. But critics say the flashy presentation of many web sites should prompt a closer look. And some would have the federal government regulate web marketing aimed at children.

"This new medium, with its vivid graphics and engaging interactivity, is quickly becoming a powerful presence in the lives of children and youth," said Kathryn Montgomery, president of the Center for Media Education (CME) (<http://tap.epn.org/cme>).



The Center and the Consumer Federation of America have been major players in efforts to get Congress and regulatory agencies to take a close look at how the online media relates to children. In March, the CME called for congressional hearings on how alcohol and tobacco companies use the Internet to market and promote their products with web sites that appeal to underage youth.

One example: Lucky Strike print ads that invite consumers to visit a web magazine that collects information and offers free T-shirts.

The Center also supported informal hearings earlier this year by the Federal Trade Commission, which is examining how some web sites run by consumer product companies gather personal information from children.

A survey by the Electronic Privacy Information Center released at the workshop showed that half of 100 of the most popular web sites collect personal information, but don't tell users how that information will be used.

Another survey by Louis Harris and Associates for the publication *Privacy & American Business* indicated growing concern about online privacy in general. More than half of 1,009 computer users surveyed said they are concerned about their e-mail being read and having their online sessions tracked. What's more, 58 percent said the government should pass laws to protect personal information on the Internet.

Of primary concern to the CME is how the Web affects children. The center says nearly five million children between the ages of 2 and 17 used the Internet, or an online service, at home or school in 1996.

"This past year has seen a dramatic growth of online commerce, accompanied by the development of sophisticated online personalization technologies," said Shelley Pasnik, CME's Director of Children's Policy. "With more and more children's marketers moving swiftly online, what is emerging is a powerful digital data collection machine, designed to extract enormous amount of personal information from children on a routine basis."

Among the web sites cited in the Center's report:



- Nabisco's Candystand site, (www.candystand.com) can play Java-based hockey and basketball games, solve puzzles, play card games and draw

Ric Manning is a columnist and web master for *The Courier-Journal* in Louisville, Kentucky. His weekly column covers computers, consumer electronics and the Internet and is distributed to more than 100 newspapers by the Gannett News Service. It's also available on the World Wide Web at <http://courier-journal.com/gizweb>.

Ric was the founding editor of *Plumb* and *Bulletin Board Systems*, two newsletters that covered the BBS arena in the early 1980s. His freelance work has appeared in several magazines including *PC/Computing*, *Mobile Office*, *PC Week* and *Home Office Computing*.

Ric lives in Southern Indiana with his wife, two children and two Weimaraner dogs.



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graffiti. Visitors are also asked to share some information about themselves including their name, e-mail address, street address and phone number. The forms also ask for favorite television shows and magazines.



- The Nickelodeon web site (www.nick.com) asks children to fill out an online entry form with e-mail address, real name, gender, and street address to be eligible to win "tons of prizes" in a sweepstakes. Optional questions ask children if they have pets, play sports or like collecting.



- At the Toys "R" Us site (www.toysrus.com), kids can sign up for an electronic birthday card by filling in a form.

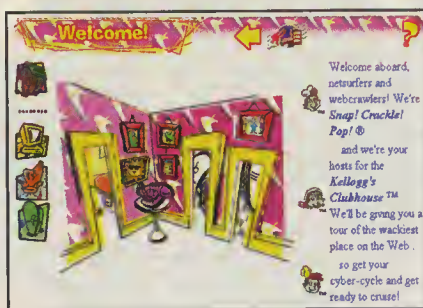
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- At the Kellogg Clubhouse, (www.kellogg.com/club) visitors are required to give their e-mail address before they can get inside and Chill with Crackle, Party with Pop or Slide with Snap.
- A site for M & M candies asks kids to provide their names and e-mail addresses and those of their friends.



- At the Colgate Kids World site (www.colgate.com/kids-world), the Tooth Fairy promises children personal e-mail in exchange for names, ages, addresses, and e-mail addresses.

Getting kids to share their e-mail addresses lets marketers initiate a personal electronic correspondence with its future consumers. One candy maker promised a free sample to kids to sign up to get "product announcements, seasonal offers and other gift items."

The center contends that few sites ask for parental permission before they quiz the kids, and that the online surveys take unfair advantage of a child's trust and openness.

The CME study also found that 40 percent of the sites also use browser cookies to track information about an online visitor, including how the person uses web sites.

Some quarters of the online industry appear are responding to the criticism and the calls for government regulation. A few days after the Kellogg Clubhouse was featured in CME's report, the site was closed for remodeling. And at the FTC workshop, a Time-Warner executive said the company is reviewing the

more than 200 web sites under its control and that it will curtail situations "where we are still collecting too much information."

Microsoft and Netscape are supporting self-regulation approach. Both say they will support the "Open Profiling Standard" that will allow users to set their browsers to specify what information they want to reveal.

CME and the Consumer Federation, however, want more. Last year the two groups asked the FTC to require that online companies obtain written permission from parents before collecting any personally identifiable information from children.

This year the groups added more requests. They want the FTC to prohibit unsolicited commercial e-mail sent to children. They would also ban merchandise give-aways or contests and the use of fictional figures to solicit personally identifiable information from children.



ASIA NEWS

With Hong Kong now controlled by China, businesses with ties to the Far East are wondering what's ahead.

One group that's trying to peer into the future is the Asia Society, an Asian cultural and educational institution based in New York City and founded by John D. Rockefeller III.

The society has a new web site called *Ask Asia* (www.askasia.org) that presents cultural and historical information about the region.

A featured article on the site is "Scenarios for Hong Kong's Future." The site also has details about other Asian projects, such as The Vietnam Challenge, a project in which an international team from both sides of the war in Vietnam will cycle the length of country together. ♦

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TELCOS, ISPs, And The INTERNET

by Dr. Arno Penzias

EVERYTHING YOU'VE ALWAYS WANTED TO KNOW ABOUT TELEPHONY, BUT WERE AFRAID TO ASK

Prior to serving as the chief scientist at Lucent Technologies, Arno Penzias was the head of research at Bell Labs. He was awarded the Nobel Prize in 1978 for his discoveries about the creation of the universe. Penzias received his Ph.D. in physics from Columbia University.

With few exceptions, analog technology dominates the so-called "loop plant" which connects some 100 million U.S. telephone customers to the local exchange company (LEC) switches that serve them. At the same time, however, the switches themselves (as well as the global telephone networks which interconnects them) employ digital technology.

In telephone parlance, "lines" (largely pairs of copper wires) connect customers to switches, while so-called "trunks" connect the switches to one another. Because the switches themselves can only deal with digits, each line connection requires analog/digital conversion. Because such "codecs" (or coder-decoders) cost a fair amount of money, switch designers arranged things so as to share a certain number of codecs among a larger number of lines. And, since telephone lines typically get used for only about thirty minutes a day, planners settled upon an architecture which provided one code for every eight lines.

Such a sharing arrangement fits well with the concept of *universal service*, i.e. the notion that everyone benefits from extending telephone service to as many people as possible. Small wonder then that regulators — state Public Utilities Commissions (PUCs) and the Federal Communications Commission (FCC) — incent LECs to build facilities with shared rather than dedicated resources.

And sharing sufficed, until the advent of the Internet. As more and more Net-surfers began to stay online for hours at a time, the sharing arrangement's underlying assumptions no longer applied. Customers who were unlucky enough to get bundled in with a bunch of modem users, found themselves waiting for dial tone. Naturally, they complained to their local exchange companies. And the LECs, in turn, added grievances of their own. While the modem users buy extra lines in large numbers, they use a disproportionate chunk of shared resources and, even worse from the telco's point of view, seem poised to make "free" long-distance calls over the Internet.

As the number of online households grows, so does their impact upon U.S. telephone service. According to a Yankee Group estimate, this country's online households will grow from today's some 15 million, to over 40 million by the end of this decade. Furthermore, the same study predicts that the overwhelming majority will connect via telephone lines. Therefore, even though other data-access technologies — such as cable, satellites, and ADSL — will grow in the coming

years, modem traffic will dominate telephone and online economics for some time to come.

To promote universal service, PUCs normally set the rates which LECs may charge for basic telephone service somewhat below the amount they consider reasonable for sustaining a healthy business. The regulators expect the LECs to make up the difference from FCC-mandated access charges from long-distance service providers (as well as from enhanced services such as call waiting etc.).

Unlike long-distance phone companies, the FCC has explicitly excluded online service providers from paying access charges. In doing so, the FCC appears to have been subsidizing the Internet vis a vis local and long-distance telephone service users.

At first glance, the LEC case seems persuasive. Internet users — or the Internet service providers (ISPs) that serve them — ought to pay their "fair share," the LECs maintain. ISPs, on the other hand, point to the extra LEC revenue they have generated, and argue that it is up to the LECs to figure out how to make money in today's competitive market, without raising rates. Who's right? The answer lies in the details of the costs involved. Since the costs at issue stem from the use of facilities, we need to examine the facilities involved, how they are presently used, as well as how they might be used in the new world of (at least partial) deregulation. Among other items, the FCC is in the process of rewriting the rules for access charges, while the Telecommunications Deregulation Act obliges the LECs to "unbundle" their loops — i.e., lease them at wholesale prices to competitors for resale to consumers at retail.

TODAY'S TELEPHONE TECHNOLOGY

While the offerings of various manufacturers differ in their details, they embody similar design principles. In a typical system, the thousands of lines served by a particular switch presently get grouped into bundles of 512, as shown schematically on the right-hand side of the first figure. (For technical reasons, most group sizes correspond to some power of 2 — such as 8, 64 and 512.) Each of these bundles, in turn connects to a so-called "line concentrator." With 512 connections on its line-facing side, but only 64 connections on its switch-facing side, the concentrator acts as a kind of funnel. When it detects a lifted telephone receiver, for instance, it connects the line in question to the switch. Conversely, when the switch signals the arrival of an

incoming call, the concentrator completes the required connection in the opposite direction.

Now here's the rub. Suppose you're "lucky" enough to live in a technically-minded neighborhood. If just ten percent of your neighbors decide to go online at the same time, they would occupy 51 (512 x 0.1) of your group's 64 possible connections to the switch, leaving just thirteen free connections for all the incoming and outgoing telephone calls made to and from the other 461 lines. Even worse, suppose that one of your neighbors decides to become an Internet service provider, begins installing modems in his garage, and orders extra telephone lines for them. Woe to the neighborhood in that case. Remember that each incoming call takes up one of the shared slots on the switch. Since most of an ISP's modems tend to be busy during the hours of highest demand, a local ISP can exert an even larger impact on shared resources. Small wonder that California's Silicon Valley ranks high in congestion-related service complaints.

Interestingly, field data indicates that most complaints of dial tone delay stem

from lines connected to ISPs, rather than your neighbors' work-from-home traffic. Why? Because of present-day economics. Roughly speaking, ISPs currently provide something like 10 modems for every 100 customers. Even at that level, something over half their service revenue goes to pay for facilities. While this level of concentration approximates the one used in LEC switches, a typical computer user generates about four times as much connection time as does a conventional telephone customer. That's why would-be web-surfers frequently need multiple attempts to get through to their online service providers (and frequently shop around in the hope of finding one with more-available access ports). From an economic standpoint, therefore, the present situation finds both the ISPs and the LECs between a rock and a hard place.

A WAY OUT

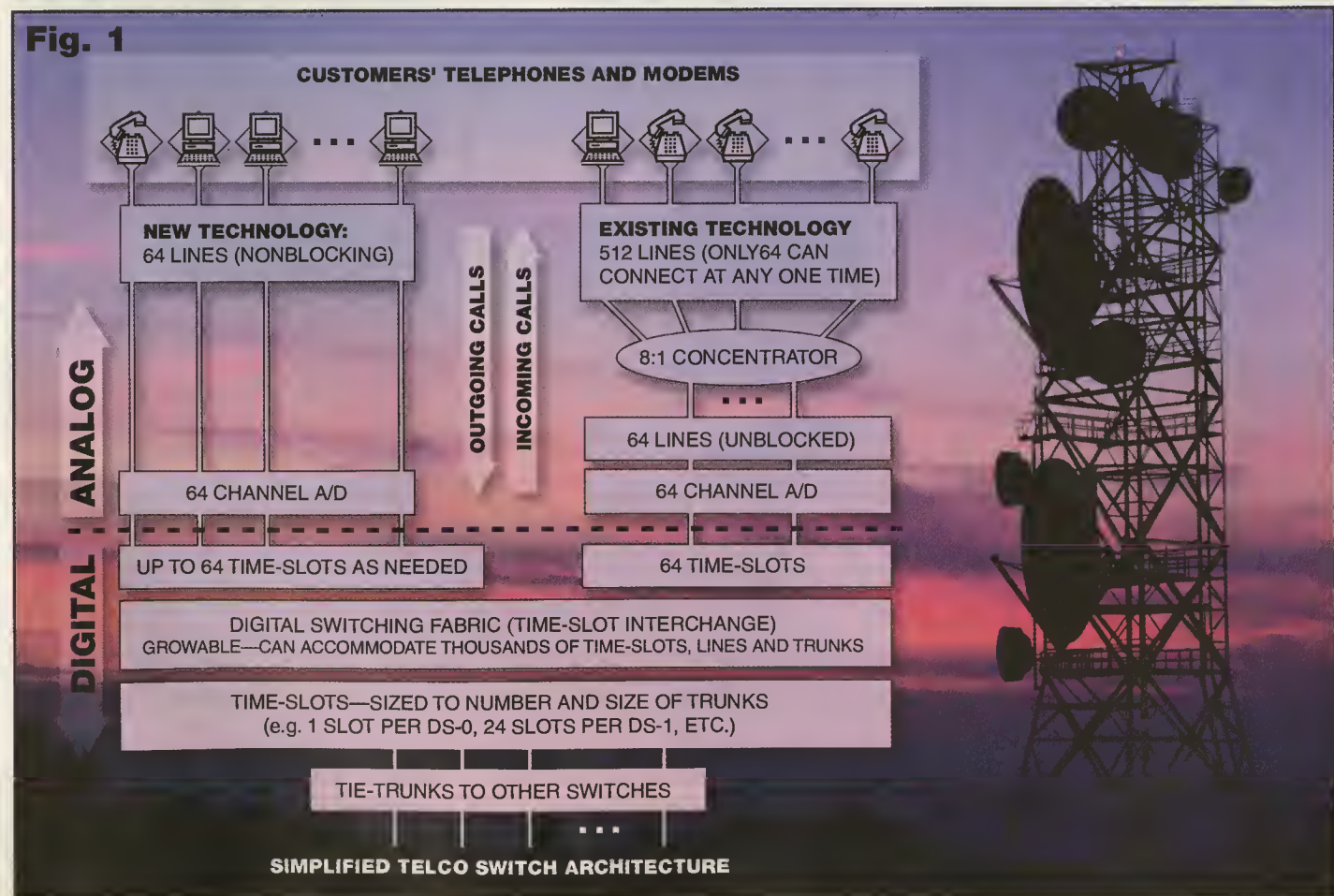
What alternatives exist to levying extra charges for Internet-related services, and thereby discouraging its use? Fortunately, telephone technology has benefited from many of the same advances which underlie recent progress on the computer side. In particu-

lar, the advent of powerful, and relatively-inexpensive, digital signal processors allows a single chip to accomplish much of the work now done by several dozen codecs — good news for congestion-threatened telephone users. In the coming months, every major manufacturer of telephone switches will offer one-codec-per line add-ons to their existing products(i.e., the non-blocking connections shown schematically on the left-hand side of Fig. 1). Most do so already.

As LECs increase the capacity of their switches by buying additional channel units, the new non-blocking technology offers them an opportunity to regroup lines with a history of high usage (mostly modems, but more than a few teenagers might qualify as well) to the new equipment. Everyone benefits. The LECs get rid of an annoying nuisance. Modem users can surf to their heart's content, and traditional telephone users can continue as before. Moreover, everyone will see better service. Sounds too good to be true? Let's dig a bit deeper and see.

COST CONSIDERATIONS

The cost of a connection from home to switch represents substantial telco



investment. Individual costs can vary all over the lot. Adding a line from a multi-wire cable of unassigned pairs costs little. Digging up the street to lay new cable, when an existing one fills up, costs a great deal. But, since this capital cost is incurred no matter how much a particular customer uses his or her line, it washes out in any usage-based comparison.

As for the switch itself, its costs resemble the razor business. The "blades" in this case being the per line connection equipment. Current costs vary (depending on things like the size of the purchase, and the functionality required), while historical costs lie on a fairly steep downward curve — much like other kinds of electronic equipment. Traditionally, telephone industry experience has shown that the cost of switching to be a modest fraction of the cost of running wires from homes to switching offices — at least as long as switch concentrators can accommodate traffic demands. Therefore, shifting as many high-usage customers as possible would alleviate the problem. — at least as far as those customers were concerned.

Three caveats, however. First, even though the per line price of non-blocking switching equipment looks to be about the same as its concentrator-based coun-

terparts, it costs money to rewire a customer connection from one switch location to another. Second, except for a modest annual need for replacement, the demand for additional telephone lines will determine the pace at which non-blocking technology enters the telephone network. Finally, the "trunks," which connect one switch to another, are entirely usage-sensitive with either the new or the existing switching technology. (Fig. 2)

To tie these threads together, let's assume that the right-hand machine (target computer) belongs to an ISP, and it makes full-time use of its switch connection (or has a high probability of use at peak hours, which amounts to the same thing). If that connection involves a concentrator, then the ISP could take up as much as eight times as much switch capacity (and its associated cost) as an average user. As the LECs move ISPs, and other "full-time" users, to the new non-blocking technology, each would employ about the same amount of line unit capital as average users — plus a bit more for a disproportionately greater share of the heretofore neglected switching fabric, the cost of occupying trunking facilities and the cost of moving the lines from one facility to another.

WHO PAYS?

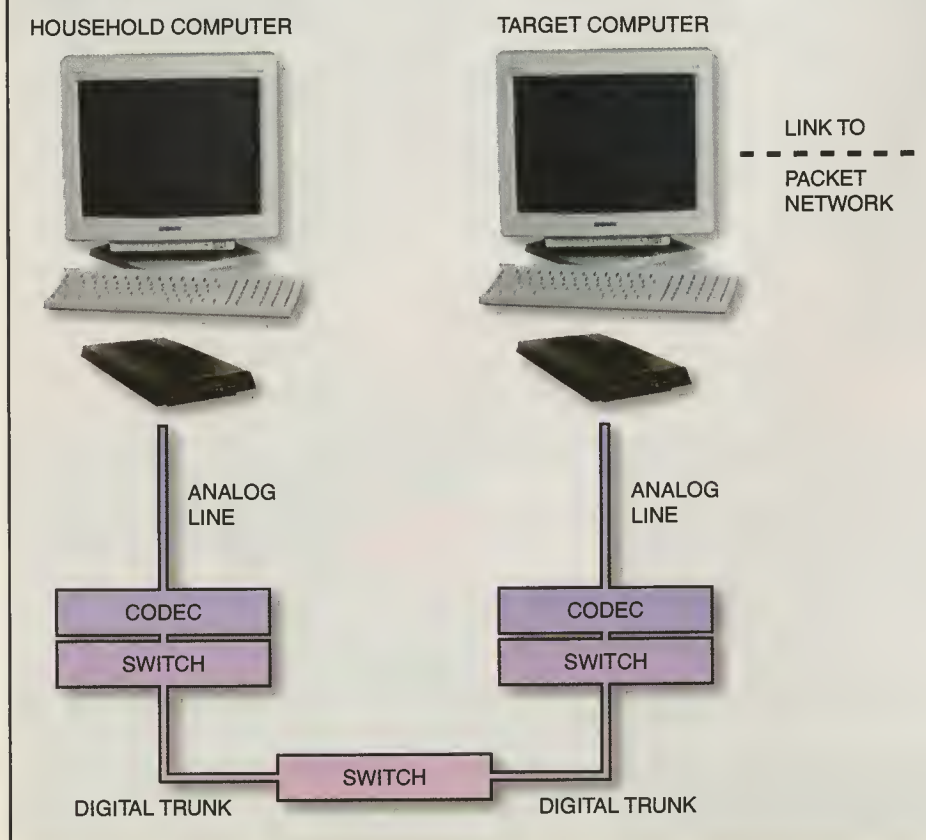
As businesses, ISPs pay more for their lines than do residential customers, so the extra money might well defray the reduced (but still non-zero) cost of extra capital required in the new system configuration. But that won't solve the entire problem. As we have already noted, LECs and their regulators, expect "normal" telephone lines to generate a certain amount of long-distance traffic. Under this government-mandated system of access charges, long-distance telephone companies pay local-service providers a few cents per minute on each call. Just pennies, but the amount adds up to a substantial portion of each LEC's earnings — and which figures significantly in the rate-setting process.

Even with the new technology, therefore, business as usual can't satisfy everyone. What to do? ISPs and their allies don't want the Internet "stifled." If LECs raise their prices to "ordinary" telephone users, then folks who don't want (or can't afford) networked computers will foot the bill. On the other hand, if prices were stay the same, thereby shifting the cost to LEC investors, then the traditional public telephone network would move that much closer to becoming a money-losing backwater.

According to publicly available information, ISPs spend something like half of their famed \$19.95 per month for communication services. Moreover, the majority of that half goes for telephone lines, some for modem maintenance, and rest for actual Internet services. While America Online, and some others, get Internet connections through their own subsidiaries, fast-growing ISPs such as EarthLink, and MSN find advantage in buying access from service providers like UUNET, so as to concentrate their internal resources on differentiable activities like customer care.

What would happen if one or more of the LECs were to become an active service provider to ISPs? Instead of feeling themselves treated as costly nuisances, ISPs could benefit from telco economies. Unlike the fragmented and geographically dispersed ISP community, the telco could place the electronic equivalent of large banks of modems on the trunk side of its switches. Since no individual ISP can afford to locate modems at every LEC switch, their connections require extensive — and expensive — trunking facilities. With a shared facility, on the other hand,

Fig. 2



modem banks could communicate with ISP facilities over cost-efficient packet networks (Fig. 3), thereby reducing the overhead associated with sending data over facilities designed for voice telephony. In addition, maintenance would become simpler. Requirements for costly extras, like the number of spares required, would diminish.

TECHNOLOGY OFFERS A WAY OUT

We could go deeper, but the point seems evident. Properly employed, technology offers us a way out of the unpleasant bind in which LECs, ISPs, and customers now find themselves. Will the above-cited savings yield enough per line profit to make up for lost revenue from long-distance access charges? While only careful analysis can answer that that question, a rough estimate suggests it not be dismissed out of hand.

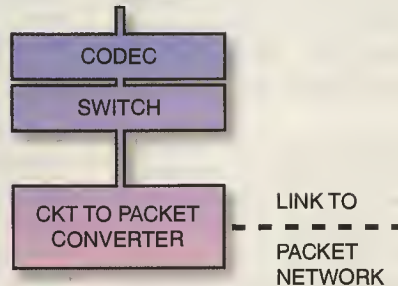
Say, for the sake of argument, that the owner of the switch shown in Fig. 3 were to offer facilities to ISPs at one half the present per modem rate (now something over \$100 according to most analysts). Such a rate might then enable ISPs to cut their customer to modem ratios from the present ten or so, to a much smaller number. As service improves, and time on the Net increases, so should revenue from advertising, gaming, commerce and the like. From the LEC perspective, driving down the cost of serving the ISP could serve as a source of efficiency-driven profits, hopefully large enough to replace whatever long-distance access charges might bring from an equivalent number of telephone lines.

One last number. At least one manufacturer of a box which, according to its brochure, appears able to perform the "circuit to packet converter" function shown in Fig. 3 — for a capital cost of about \$200 per (virtual) modem. Whatever the actual purchase price, we can surmise that the total cost of providing the service will hinge mostly upon how one locates this unit in the network, together with the costs associated with operation, administration and maintenance.

In the final analysis, however, the actual choice of architectures may well have at least as much to do with regulation as with economics. Present FCC regulations appear to require LECs to either serve ISPs as if they were telephone customers (with all the extra paraphernalia that such treatment implies), or handle them through a separate business enti-

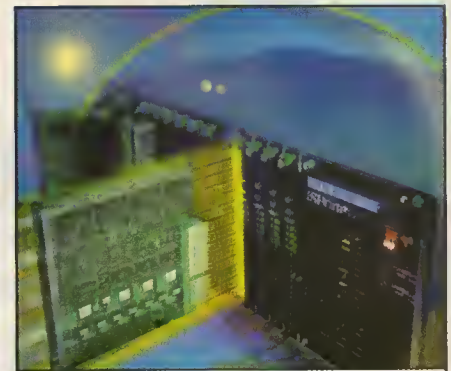
Fig. 3

HOUSEHOLD COMPUTER



ty. While not altogether hopeless as far as matters stand today, the first alternative appears to offer little room for future enhancement. The second alternative, on the other hand, incents LECs to place an extra layer of switching between residential customers and the telephone switches which presently serve them, so as to detour Internet-bound traffic out of the public network before it can cause accounting difficulties. Naturally, the cost savings and related revenue cited above would also detour out of the public network at the same time.

Looking to the future, an increasing number of households will opt for broadband digital service straight to their doorsteps in the coming years. Someday, everyone else will also get that same kind of service. But how can we serve "everyone else" in the meantime? With so many interested parties holding large stakes in the answer, the question seems certain to provoke lively discussion. ♦



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franksowa@aol.com

CYBERWORLD MONITOR

Frank X. Sowa

SPECIAL REPORT: TEN TRENDS THAT WILL IMPACT YOUR FUTURE

Just five short years after the World Wide Web and the Internet wreaked havoc on the future of the proprietary online and BBS world, current trends indicate that over the next five years, the online/Internet/intranet industry will go through a number of tumultuous changes that will eventually have an impact on every segment of society and present us with something decidedly different than the Internet we know today.

To get a sense of what is going on in our industry, right now, we need to become aware of important trends so we can anticipate forthcoming developments that will have an impact on our lives, our employment, and our bottom line. All of us who work, and are adept, in this field have skills that will be in high demand for some years to come. But, unless those skills are honed to meet the evolving trends, we may find ourselves pursuing obsolete paradigms (the BBS), rather than those that will keep our skills in demand.

THE TEN AREAS TO WATCH:

1. The evolution of network-centric computing as a new standard
2. The move toward high-bandwidth information superhighway concepts
3. The maturing of push and pull technologies
4. Eradicating software piracy based on new copyright laws
5. Taxation and fee schedule schemes for the Internet
6. The evolving online world and the push for e-commerce
7. Government regulators moving to the Net and new media laws
8. Controls for Internet privacy, security, protection, and encryption
9. New network paradigms based on parallel processing in the network
10. The growth of virtual presence on the Net

NETWORK-CENTRIC COMPUTING

"With the emergence of the Internet, a whole new layer of network-centric software is taking shape which will be intrinsically cross-platform, and very different from the personal computer operating systems we are so accustomed to," then-Apple Computer CEO Gil Amelio said during a recent appearance on America Online. That software has "evolved from the mainframe era to the personal computer era, and now

the network computing era," according to Mike Jarvis, vice-president of server marketing at Oracle Computer.

While current thought suggests that the Web, Java, Oracle's Network Computer (NC), the Wintel world's Windows NT and Windows-based NetPC, Apple's network-centric Rhapsody, IBM's Lotus Domino, messaging and groupware concepts, and network-based companies like Netscape will transform the industry as they all add more scalability and flexibility to the networked computer. The transition is nowhere near complete. While Microsoft and other industry giants have hedged their bets by moving into all foreseeable future aspects of the industry, there still is room for an upstart to take the world by storm with a technological breakthrough.

Network computing will continue to aggressively evolve as the most major trend impacting ISPs and others that work with and use this industry. It will definitely change the current visions of computing before the turn of the century. Those who read *Boardwatch* will be at the center of this transition.

HIGH BANDWIDTH INTERNET CONCEPTS

As network-centric computing evolves, certainly the biggest factor to contend with will be providing enough bandwidth, the pipeline, for networked applications to run upon. While many have predicted a large fallout in Internet service companies and ISPs over the last few years, the market — still in its inception and frontier stage — leaves tremendous room for continued growth as has been tracked by *Boardwatch*. However, if operating system and application developers keep creating larger programs that require higher bandwidth, that will require a new Internet delivery approach which will prove costly to the current ISPs, and could therefore force the Internet service market to contract dramatically.

This may, or may not, bring an end to the Internet as we know it. It will certainly create a new network-based market. At the forefront of this shift are a number of new infrastructure concepts that I've covered in this column over the last year.

"Next-Generation Internet (NGI)" and "Internet 2" are two government-sponsored initiatives to upgrade the current Internet to higher bandwidths to meet rapid growth. Some of the private sector initiatives include: WebTV; DVD CD ROMs; smart cards and personal digital assistants; wireless and satellite; HDTV, tapeless digitized television production, the

TV-PC and cable modems; and electric company initiatives to carry higher bandwidth to the end-user.

President Clinton last fall called for the government to spend **\$100 million** a year for five years on the government initiatives. The NGI effort was to be paid for by a contribution from the defense budget and a number of federal agencies such as the Department of Education. Proponents of NGI say it will help keep the U.S. at the cutting edge of information and communications technology. "Internet 2" refers to the underlying network for a similar effort that will focus on academia. A number of universities and research institutions received National Science Foundation grants to enable them to create an new Internet telecommunications network that is between 100 and 1,000 times faster than today's Internet. The very high speed Backbone Network Service, or vBNS, has been designated as the primary telecommunications network for "Internet 2."

Faster transmission speeds will lead to advanced applications that today's Internet can't accommodate including real-time streaming of video and audio, and virtual reality in real time. Among other uses being mulled are entertainment, telemedicine, distance education, scientific research, environmental monitoring and manufacturing engineering.

Microsoft is predicting that all PCs will be capable of receiving digital television signals by about 2000, breaking the way for higher bandwidth uses and the convergence of television with the computer. They plan on adding this feature to the next release of Windows and Windows NT next year.

"TVs have no choice but to move somewhat closer to PCs, while PCs have to move more toward simplicity," a Microsoft representative told a Tokyo business group. The new TV-PCs are expected to access the broadcast world through any standard ISP and offer high resolution digitized pictures, interactive programming, and be fully Internet-capable, with web-enhancements that will let consumers process secure financial transactions, print to printers from TV shows, use the latest network-centric multimedia, as well as receive satellite broadcasting and cable TV signals.

When at high-bandwidth, what sort of content will it deliver? Content remains the missing ingredient that will fuel an

explosion in Internet services for years to come.

PUSH AND PULL TECHNOLOGIES

By 2000, the new so-called *push* technologies, well positioned to become the next new medium spawned by the Internet, will have matured to become an essential component of a comprehensive component of all operating systems, as well as a consumer and government profiling system. The system would work like this:

Push, built into the operating systems of all desktop computers, will give "content providers" the means to automatically deliver controlled and regular updates of information, "software developers" the means to deliver new software updates, and "ISPs and server owners" the means to maintain application software that is automatically downloaded for a usage fee to every computer and TV-PC hooked to the Net each time it is used.

Meanwhile, cookie technology built into that same software, along with data-mining (profiling) applications will keep track of what information the computer user is interested in, what software he has installed on the machine, and what he uses the information and software for — to create comprehensive end-user profiles for marketing, sales, technology enhancement, control of software piracy and government agency purposes.

The Internet itself will grow to accommodate the bandwidth demands of push, as has already been explained.

On the other end of the spectrum, the pull technologies will begin to mature as well — focusing around familiar messaging and collaborative work concepts. Messaging is an essential part of any integrated application on the Net, and the low-cost delivery of messages, documents and workflow information will be essential to the future of the Internet.

In the network-centric computing environment, databases, file and web servers make up the central point of integration, unifying operational and collaborative data to support the full range of business and consumer applications. For example, a user fills out an e-mail form creating HTML mail which triggers something in a workflow process — whether it be an extension of push technology, a traditional sales call follow-up, or the downloading of information or a network-based application. By 2000, these all should be seen as seamless and very easy-to-adopt



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on the end-user side — and a boon to the ISP market, as the industry moves from a somewhat passive e-mail, graphics and delivery approach common on hobbyist bulletin boards to a more collaborative deployment within — and from the network — approach to business and consumer needs.

The workstation market, now growing by 30 percent yearly, will be the biggest benefactor on the pull side.

SOFTWARE PIRACY AND NEW WORLD COPYRIGHT

Coming off a partial success in establishing standardized worldwide copyright laws, the Clinton Administration and the U.S. Congress are gearing up for round two. The changes in copyright will have far-reaching effects in cyberspace — far more than the threat to free speech that the Communications Decency Act did last year.

At the center of the controversy are two issues — software piracy, and transmission rights over the Internet.

In both cases big business is teaming with government to place controls on the anarchy of the Internet. Unlike the CDA,

these controls have merit, at least on the surface. However, a detailed look still shows many problems that need to be countered by heavy ISP and user involvement. In July, the Clinton Administration unveiled its new "Framework for Global Electronic Commerce" recommending a number of new concepts to protect intellectual property rights in cyberspace.

Meanwhile, congress has decided to join in the fight against international software piracy, and plans to hold hearings later this year on the causes and effects of illegal copying and use of computer programs citing the loss of 130,000 American jobs and \$11.2 billion in software sales.

Earlier this year, the software industry released a report that found, while piracy rates were often very high in developing countries, software theft in the U.S. represented by far the largest dollar loss to the industry, as more than one in four software programs in the United States is illegal. Big business and congress are demanding a crackdown before 2000. How this pans out could have a massive affect on ISPs and people on the Net — as the Internet may become the number one tool for facilitating this crackdown.

INTERNET TAXES, FEES AND ACCESS RESTRAINTS

No big surprise here. The Internet is supposed to become a large matrix of e-commerce, and state, local, federal and international governments all see it as their new way to bring in tax revenues to keep growing their bureaucracies.

As a result, just about every government entity has proposed some method — either by direct tax, or by indirect fee structures to bring in revenues from the Internet. Others are proposing access fees. Some by the byte. Some by the minute. Some by the domain name.

Even bureaucratic agencies are getting into the act. Not trusting private initiatives to link up the schools and libraries of the nation to the Internet, the FCC has created regulation for "universal access" fees that will increase line charges on second lines, on data and business lines by 30 to 60 percent, and use the money to provide free telco Internet cabling to the schools and libraries of America.

Meanwhile, the NSF wants to unilaterally establish an American Registry of Internet Numbers — forcing ISPs to pay

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for each numerical Internet address — charging a “minimum” \$2,500 yearly fee to maintain a “Class C” block. In addition, the new organization (which will be run by SAIC’s Network Solutions Inc.) will impose new fees for individual address space assignments, individual address space transfers and autonomous system number (ASN) allocations, will raise the domain name charges from \$50 per year to \$250, and will charge an annual maintenance fee for assignments. (See: www.nsf.gov/od/lpa/news/press/pr9746.htm) And, still others, are proposing taxes by the type of connection. As one, or all of these become reality, they will have a major impact on the future of the commercial Internet.

To make certain that the growth of the Internet is not stymied by regressive taxation, Congress has proposed a national moratorium on state and local taxes on the Internet — until a “best means,” perhaps through federal collection, can be implemented. State and local governments see the moratorium as “an infringement on state and local sovereignty” and their rights to tax.

Still another perspective is being pursued by the Clinton Administration. Its new “Framework for Global Electronic Commerce” would set aside the Internet as a duty-free trade area. This would have a net effect of standardizing world trade, and opening up world markets to carrying out global commerce via the Internet without any mercantile restraints. At the same time, it would give the United Nations and other forms of world governance a means by which it can impose globally uniform rules and rights, protect intellectual property, and control international network and commerce security.

THE EVOLVING ONLINE WORLD AND E-COMMERCE

And, while governments see online commerce as the solution to all their tax problems, the Internet industry has yet to see electronic commerce concepts take off in a manner that proves their viability. The display advertising-based business model for Internet-related ventures is also being closely watched. Advertisers are complaining that only a tiny percentage of Internet surfers actually see the ads and follow up with visits to their sites.

Bucking this trend has been the Internet search engines, and especially Yahoo!, which announced profits this

year to become the first profitable display advertising-based Internet company. But, while the Internet display advertising doesn’t seem to get the consumer traffic, other concepts are having more measurable results. These include online auctions, catalog sales, Internet ticket ordering, Internet couponing, Internet “matchmaking” services for professional service providers, and Internet brokerage services. Internet banking is also becoming a reality in 1997, showing mixed results.

Many of the smaller businesses, that use the Internet to maintain contact with customers are also proving themselves better marketers than the largest companies who are investing millions to maintain a static web presence. Slick, proprietary concepts targeting the consumer, and general business are also dying — with the exception of America Online, which continues to struggle in spite of its growth. CompuServe, MSN, AT&T and others are all considering scrapping their online content networks as the expected growth and revenues have never occurred. Some others are opting for niche business segments.

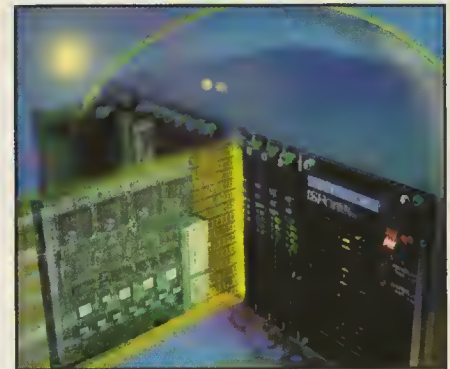
The United States Federal Trade Commission and Congress have both started hearings to see how they can improve Internet security and privacy, believing that allaying fears is key to seeing e-commerce take off.

In spite of dismal returns so far, major retailers are continuing to see the concept of online shopping as a priority. Currently, about 19 percent of all retailers provide a means for online shopping, but an additional 39 percent say they plan to have an operational virtual storefront by 1999, with book and music retailers, grocery and department store chains, and non-apparel specialty stores that offer a “catch-all” of retail goods leading the way.

Use of the Internet as a key channel for financial transactions is expected to grow also over the next several years, fueled by low development cost and the opportunity it offers corporations to shop around for banking services. Eighty-seven percent of the U.S. banks plan to provide complete Internet transactions by 1999, and 95 percent plan to use the Internet for information dissemination.

NET REGULATIONS AND NEW MEDIA LAW

The biggest damper to future Internet growth could be all the local, state, fed-



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eral and international regulations being proposed. Of course, the capability to interpret those regulations and laws correctly, should also provide a boon to "new media" law practices. In fact, studies suggest that trial lawyers adept in Internet law may be able to make ten times that of their traditional counterparts by 2003.

Because of the myriad proposals for a stitchwork of new Internet laws and regulations worldwide, the Clinton Administration is calling for a moratorium on such lawmaking — proposing that the world leaders declare the Internet a tariff-free environment that has uniform rules and rights but is flexible on emerging standards, being free to be self-regulated based on negotiated terms according to widely accepted international legal principles, protecting intellectual property rights, and providing enough privacy to enable people to feel comfortable, within the controls of international security issues.

Believing that global electronic commerce must be market-based to take off, the Clinton Administration is suggesting to the world leaders that they should take a hands-off approach toward elec-

tronic commerce because typical government action is not flexible and quick enough to keep pace with technological changes. The Administration is recommending that a common international framework for taxation, regulatory and legal issues should be agreed upon and put in place on a global basis, outside the territory turfs of independent countries by 2001.

INTERNET PRIVACY, PERSONAL SECURITY, ENCRYPTION

The issue of Internet privacy will grow to take center stage over the next year. The issue — both legal and practical — will pit First Amendment rights' activists, and those who regard their privacy as important.

The U.S. government seems to have taken a "middle-of-the-road" approach on this issue wanting enough appearance of privacy on the Internet to make people comfortable, but not enough so as to allude security, intelligence, tax collection, regulatory and police actions. The result will most likely be a less private, but more secure Internet where abuses like "spam" are more heavily regulated — but where creating profiles on

individuals via data-mining is tolerated as long as those efforts are shared with the government.

As for encryption, the world governments will continue to push for controls — while some greater levels of private sector encryption are tolerated to secure e-commerce proposals. In the meantime, abuses of privacy, security, and encryption by scam artists, hackers, individuals, copyright infringers, pornographers who publish obscenities on the Net, and organized crime will be placed under higher levels of scrutiny. Criminal laws are expected to be enacted that will constitutionally crack down to make the Internet a "safer place."

PARALLEL PROCESSING VIA THE NET

Two new concepts will tend to bring out much larger potentials of the Internet. The first of these is parallel processing via the Internet. The concept of parallel processing to increase computer speeds has been with us for over a decade. Still pretty much an experiment in the federal and university labs, parallel processing aims to break a problem into many smaller tasks, and then perform each one simultaneously on its own processor, recombining the final results into a single answer.

Parallel processing via the Internet is a similar concept, but instead of worrying about speed, it is allowing users to jack into the awesome processing power of millions of computers from supercomputers down to the smallest net appliances using "smart bots that multiply their efforts exponentially through the Net," to provide access to resources in the same parallel fashion to return with a single answer. The resources could be information bits, or executable bits of data (this is where these concepts differ from search engines) thereby making the concept of network-centric programming and computing a reality.

This meta-brain matrix, will finally move computing from conventional number-crunching to augmenting human intelligence and creativity.

The second of the two concepts is that of virtual presence on the Net. Virtual presence is the key to virtual employment and virtual "travel," and possibly holds the future of the ISP market for those that are operating today.

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work together employing techniques via the extension of the Internet so that they actually are immersed in a virtual presence at the other point.

This second concept, through 3D simulations, and through virtual reality is actually moving toward reality at a much faster pace than other components, and inexpensive working models should be in existence by 2000, as the ground has been laid for nearly a decade through military and commercial simulator efforts. ♦

US West Seeks to End Leasing Local Area Data Service Circuits

by Todd Erickson

Telecommunications giant US West Communications filed an application and advice letter with the Colorado Public Utilities Commission (PUC) to discontinue leasing Local Area Data Service (LADS) circuits to new customers, and to discontinue leasing LADS circuits to existing customers after June 1, 2002. LADS circuits are a pair of voice-grade telephone cables with the same specifications as a residential dial tone circuit, strung between two locations no more than six miles apart, with one location being no more than three miles from a US West central office. US West originally offered the LADS circuits to alarm companies to transmit data between locations. Recently, Internet service providers (ISPs) and data transmission providers leased the circuits from US West and used Direct Subscriber Line (DSL) technology for high-speed, direct Internet access, and high speed data transmission services.

In its application to discontinue offering the LADS circuits, US West claims the LADS circuits have "unique metallic, non-loaded provisioning requirements, limited distance capabilities . . . and limited demand." US West claims that "more and more services are provisioned utilizing subscriber line carrier systems, and these systems cannot be used for LADS. Within the last year, there has been a 10 percent overall decline in LADS circuits." US West also claims that as of March 1997, there were only 18 customers leasing LADS circuits. US West asked to discontinue offering the circuits after July 14, 1997.

Opponents of the application believe US West is seeking to discontinue offering LADS circuits to cut off competition. In its Notice of Intervention by Right and Alternate Petition for Intervention, MCI Telecommunications claims " . . . [US West] is engaging in discriminatory acts that adversely affect the development of local competition . . . The withdrawal of this service may deprive competitors, like MCImetro [MCI's local exchange service subsidiary], the ability to provide cost effective HDSL and other wide-band capabilities over the local networks of US West." MCI also accuses US West of violating the 1996 Telecommunications Act by imposing "unreasonable and discriminatory conditions or limitations on the resale of its telecommunications services" [Telecommunications Act of 1996, 47 U.S.C. §§251(b)(1)] and other violations.

US West's application requested expedited treatment of the application so that the Commission decision could be made prior to US West's desired effective date. In an entry to the record on June 4, the Commission denied the request for expedited treatment and directed the PUC to publish notice of the application, and give interested parties 30 days to file comments, objections or materials to intervene in the application. Prior to the July 7 deadline, four parties filed petitions to intervene in the application: *Boardwatch Magazine*, MCI, ICG Telecom Group and Carl Oppedahl. The parties whose petitions are granted will have the right to present testimony, exhibits and written evidence at a hearing on the application. These parties will also have the right to send written questions to US West about the application prior to the hearing and cross examine US West witnesses at the hearing.

At the time of this writing, four parties have also filed comments or objections to the application, including three ISPs. A spokesperson from US West could not be reached for comment on the application.

At the July 9 open meeting, the PUC Commissioners suspended US West's application and advice letter, and sent the matter to an administrative law judge for disposition. Suspending the application and advice letter essentially forces US West to continue to offer LADS circuits to new customers until the matter is resolved. The Commission sent the matter to an administrative law judge because the matter affects a relatively small number of customers and will be more effectively and quickly administered by a judge rather than by the Commission. A tentative hearing date has been set for September 5, 1997.

The deadline for intervention in the application was July 7. However, comments and objections to the US West application will be accepted by the PUC and considered by the administrative law judge up until the date of the hearing. If you are interested in commenting on the US West application, send your comments or objections to the Colorado Public Utilities Commission, 1580 Logan Street, Office Level 2, Denver, Colorado 80203. Be sure to place the docket number (97A-243T) at the top of your letter. ♦



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New Mexico ISPs Draw the Battle Line Against US West

by Bill English, President, ONRAMP, Inc.

Recently, there has been a lot said about the possibility that telecommunications companies would be allowed to charge a 10¢ per minute Internet access charge. The FCC has stated that it will review the petitions of these companies, but in all likelihood it would not endorse such a move and not allow approval of the petitions. ISPs everywhere breathed a collective sigh of relief, but did so prematurely.

In February of this year, US West lobbied for, and successfully had, a bill (Senate Bill 850) introduced into the New Mexico State Legislature. This bill would allow US West to charge a ten cent per minute Internet access fee. ISPs from all over the state banded together to fight US West's obvious move to take control of the Internet within New Mexico. Additionally, the State's Attorney General stated in an article in the *Albuquerque Journal* that not only was US West's reason for this charge ridiculous, but the move was highly illegal. US West responded to the article with an article of its own, citing its reasons and explaining that because of the restrictions of bandwidth and the fact that the Internet was growing faster than the company was able to keep up with. This would limit its growth and help to finance its expansion. Although not completely successful, the ISPs within New Mexico raised enough of a furor that the bill was finally tabled until the next session of the legislature.

From the ISP perspective, US West, and several other national telecommunications companies, has done nothing but try to take total control of the Internet by using such tactics as outrageously high local loop charges for links into the Internet. Its refusal to accept the FCC's enhanced service provider guidelines as stated in FCC regulation 64.702, and their refusal to exempt the local ISP or enhanced service provider from the \$2 to \$3 long-distance access charge per local customer dial-up line, is designed to do nothing more than to drive the small, independent service provider out of business.

The first major effort on the part of the phone companies to do this began in 1996 when the telcos petitioned the FCC to regulate ISPs as long-distance companies because of point-to-point Internet telephone software. They claimed that since Internet users were now able to make long-distance phone calls to other Internet users without paying long-distance toll charges and access fees established by the FCC and state utilities commissions, this was a clear violation of FCC requirements and regulations. What they failed to mention to the FCC was that until the compression factors in much of this software is refined, Internet telephone software is more of a novelty than anything else. Its use, for the Internet user unable to afford multimedia teleconferencing software and phone lines specifically dedicated to this use, was not a major concern. Fortunately the FCC wasn't quite as dull as the phone companies thought, and it denied the petitions. Not to be deterred, the phone companies once again are attempting another end play to take control of the Internet.

One of the basic functions of the local Internet service provider, is to provide local affordable access for those communities that do not have local access into the larger Internet companies such as America Online, Prodigy, AT&T Internet, MCI, US West, and several others. For most of the users in these areas, Internet use is dependent upon 800 charges incurred when using such services. By utilizing a local ISP they are able to use the Internet more effectively and affordably. The phone companies reasoning here, seems to be they have decided to enter into the Internet business and if they can't convince the FCC to allow them to impose a 10¢ per minute Internet access charge, they will go to each individual state and "con" that state into allowing them to do so. The idea being if everyone has to charge 10¢ per minute the Internet user will go to the telcos for larger and better service, thus putting the smaller ISP out of business and removing the competition. It would appear that an antitrust suit of monumental proportions could be in the making if they are successful. But this, of course, doesn't do the small ISPs any good if, in the meantime, they cannot stay in business. This is what the phone companies are counting on!

Interestingly enough, US West has had anything short of a dismal performance record in both Arizona and New Mexico. In the past year, the company has appeared before the utilities commissions of both states to explain why they have not been able to provide adequate basic service. In the state of New Mexico, US West is currently being forced to pay daily fines of several thousand dollars because it refuses to accept the tariffs imposed by the New Mexico State Utilities Commission for residential ISDN. It has done nothing to activate the ISDN equipment that was installed over seven years ago in its major New Mexico telephone exchanges, or to begin the process of installing ISDN lines to local communities. Here again, it would appear that rather than fix the existing problems, US West is attempting to find ways to generate more income to cover its losses.

The argument could be used, that the phone companies, like the small ISPs, are businesses. And like any business, they must spend money to make money. Why should the consumer be forced to subsidize their growth and expansion in favor of them being able to go to their stockholders to report record profits for the year? The phone companies should be forced to take some of those profits and turn them around into upgrading facilities, and expansion, the same as any other business.

As for SB850 that is currently waiting in the New Mexico State Legislature, there is the very real danger this bill will pass, and if it does, US West and the others will be able to take more aggressive steps to ensure their control over the Internet. It's not big brother we have to worry about, it's big business. ♦

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EURO NEWS

Richard Baguley

U.K. SATANIC ABUSE REPORT APPEARS ONLINE

Richard Baguley is the technical editor of *Internet Magazine* (www.emap.com/internet), the U.K.'s best selling Internet magazine.

He is an ex-editor of the now-defunct *Internet Today* magazine (which folded after he left), an ex-editor of *Amiga Shopper* magazine, and a widely respected writer and Internet consultant. His work has appeared in magazines such as *Mac Format*, *.Net*, *Wired News* and *WebMaster*.

Richard lives in north London and drinks tea. He can be contacted at baggers@baggers.com.

In 1988, a U.K. council commissioned a report into an important child abuse case, where several generations of an extended family had been tried for sexually abusing children. The social workers who took the children into care believed that the children had been abused as part of a Satanic ritual. Following this case, the Nottingham County Council commissioned a report (called the *JET Report*) about the case and the way the Social Services department had handled it. However, when the report was complete (in 1990), the Council decided to not publish it. They repressed the report and refused the requests by journalists to see it, although the rumors were that the report was very critical of both the Social Services department and the Council over their handling of the incident.

Skip to 1997. In early June, three freelance journalists (Nick Anning, David Hebditch, and Margaret Jervis) obtained a copy of the *JET Report* and decided to publish it online (www.users.gloбалnet.co.uk/~dlheb/Default.htm). Unsurprisingly, Nottingham County Council moved quickly to block this, getting an injunction to stop the online publication of the report on the grounds that it was a breach of their copyright.

However, before this injunction took effect, a number of people around the world took copies of the report from the site and put them onto their own web sites. The journalists removed the report from their site and replaced it with a list of mirror sites. Following a further legal judgment, they removed the list of mirror sites until a full legal ruling could take place.

Not satisfied with this, the solicitors for the Council sent out threatening e-mails to the authors of the mirror sites, claiming that "Copyright in the report is vested in the Nottinghamshire County Council and has been since 1990 . . . Any copying of the report is an infringement of the Nottinghamshire County Council's copyright. For the avoidance of doubt the copying of the report or any hypertext links on this Internet Website is an infringement of copyright . . . unless the report is removed from the Website forthwith and for the avoidance of doubt within 24 hours of receipt by you of this mail. The Nottinghamshire County Council will issue such Court Proceedings including injunction proceedings or take any action as may be appropriate."

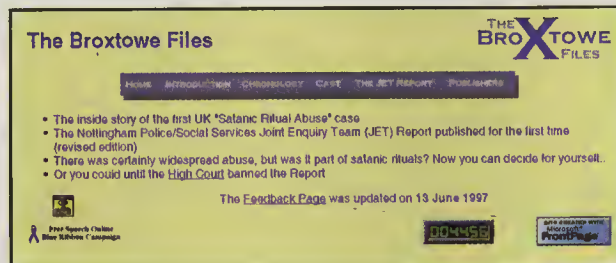
Some people complied and removed the report from their web sites. But many decided to incorporate a link to one of the sites which was still holding the report. Again, the Council decided to take action against these people, and their solicitors sent out e-mails threatening the web site authors with legal action if they didn't remove the links to the report, claiming that, "Neither you nor the owners of the web site have sought permission from the Nottinghamshire County Council as copyright holder to store the Report by electronic means. I therefore give you notice that unless the report is removed from the web site forthwith and for the avoidance of doubt within 24 hours of receipt by you of this E-mail the Nottinghamshire County Council will issue such Court Proceedings including injunction proceedings or take any action as may be appropriate."

Although many people have removed the report under threats of legal action, many others have decided to stick it out. Foremost amongst these is Peter Junger, professor of law at Case Western

Reserve University in Cleveland, Ohio. He has a mirror of the report at http://samsura.law.cwru.edu/comp_law/jetrep.htm. In a reply sent to the solicitors acting for the Council, he points out that "you ignore the fact that I and my web site are located in Cleveland, Ohio, in the United States of America, a locus where the writs of the courts of the United Kingdom have never run . . . I have little difficulty in imagining the headlines that would have resulted had I taken such a course of action: 'English Prosecutor Forces U.S. Law Professor to Suppress Report on Satanic Social Workers' or 'Satanic Coverup Spreads to U.S.'"

Professor Junger's reply points out one of the fundamental problems of copyright on the Internet — where do you apply the law? Both he and the web server are located in the United States, but the nature of the Internet means that any person in any country with Internet access can read it, save copies, and then distribute it, if they wish.

Even if the Council decides to seek an action in the U.S. to remove the report from his site, he would have a defense of fair use — a get-out in U.S. copyright law, which allows people to reproduce copyrighted documents if they are reviewing or otherwise discussing



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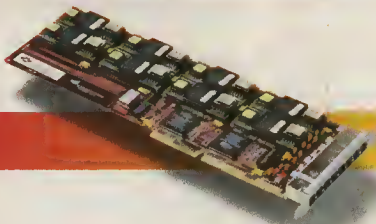
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them. However, there is no such provision in U.K. law. Although the actual mechanics and interpretations of the law do differ, most countries have similar caveats to their copyright laws.

Anyway, even if the Council did get a ruling against the professor to force him to remove the report from his site, this would still leave the mirror sites in Germany, Holland and many other countries. Would they be able or willing to go to the courts in each and every one of these countries?

Bizarrely enough, the council's actions are probably the best thing that could happen for those wishing to publicize the report. As Professor Junger says in his reply, "At my site alone the report has already been retrieved more than 2,500 times. For those of us who are opposed to governmental censorship of information on the World Wide Web, this reaction is gratifying. I doubt that it is so for your client."

By trying to suppress the report with vague legal threats, the Council is actually persuading people to distribute it. It seems unlikely that the people who have mirrored it would have been interested in a report on something that happened years ago in a foreign country if the council hadn't started threatening people with legal action. They have generated far more negative publicity by firing off legal threats to all and sundry than if they had allowed the report to be published in the first place...More details are available from the web site of Cyber-Rights & Cyber Liberties at www.leeds.ac.uk/law/pgs/yaman/yaman.htm.

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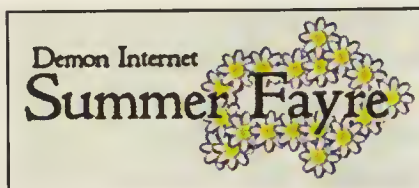
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DEMON SEEKING A PARTNER

One of the U.K.'s first ISPs has decided to seek a business partner by looking for a company to buy 49 percent of the company. Although no announcement has been made at the time of press, the rumors are that a large European telecom company is likely to pay several million pounds for a minority stake in the company.



Demon Internet (at www.demon.net) started in 1992 when Cliff Stanford (who is still the managing director of Demon) and a group of partners persuaded 200 people to pay **£120** in advance for a year's Internet access. They used this money to buy a leased-line and other equipment, and the company started offering Internet dial-up service to customers for a tenner (**£10**) a month. Ironically enough, they bought their first leased-line from Pipex, who later became one of their strongest rivals in the U.K. dial-up market.

In many ways, Demon defined the way that access is charged in the U.K. with their "tenner a month" policy — although there have been other pricing schemes introduced since — the majority of U.K. ISPs have followed this pattern of a flat fee for unlimited use. This works because, unlike the U.S., local calls (and thus calls to access the Internet) are not free — they are charged at around **70 pence (US\$1.16)** per hour, ensuring that users don't simply leave their machine connected to the Internet when they aren't using it. Well, unless they don't care or aren't paying for the phone bill.

The fact that Demon is now seeking a partner to buy part of the company (and inject a large amount of cash) shows how much the U.K. dial-up market has changed over the past few years. When Demon started, there were only a handful of companies offering dial-up Internet access, with e-mail being limited mainly to academia and computer companies.

The market is now largely dominated by big companies with huge economies of

scale — although there are still plenty of smaller companies, many of these are being swallowed up by the big players or driven out of the market completely. Pipex was bought out by MFS, Planet Internet was bought out and subsequently closed by AT&T (who presumably have their own plans to use this to launch a U.K. version of their WorldNet dial-up service) and Global Internet amalgamated with a group of other companies to increase their corporate clout. Although many of the smaller companies continue to be popular, many are beginning to realize that competing against companies with loads of cash to spend on free CDs, free trials, and extensive advertising is going to be difficult, to say the least.

E-MAIL BULLIES IN EUROPE

A recent report commissioned by Novell U.K. claims that over half of the people surveyed regularly receive flame mail. Strangely enough, this is much more common in Scotland, where 61 percent of those surveyed say they regularly receive threatening or abusive e-mail, compared to 49 percent in England and only 44 percent in Ireland.

Despite this heavy flame mailing, the report (snappily titled *Shaming, Blaming and Flaming: Corporate Miscommunication in the Digital Age*) also claims that 77 percent of the people in the survey say they couldn't do without their e-mail. It claims that 31 percent of those who receive flame mail reply with another flame mail, which presumably leads into an ever increasing cycle of nasty e-mails flying back and forth.

Interestingly enough, the report also shows that very few people in the U.K. like using voice mail. Of those surveyed, only 43 percent actually used voice mail and only one percent said that they prefer using voice mail to e-mail. Although the report focuses on the abuses of e-mail (such as people who bully or intimidate others through e-mail), what it really shows is that e-mail is becoming a widely used tool in business. Quite why flame mails should be more popular in Scotland isn't quite clear, but it is obvious that e-mail is becoming more and more common, even if it isn't always being used for pleasant purposes. ♦

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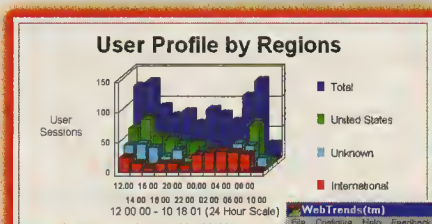
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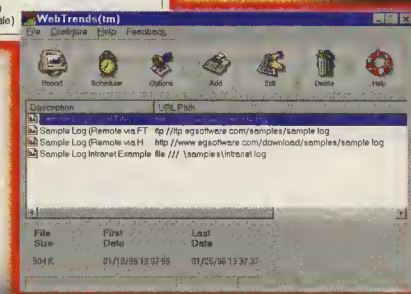
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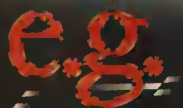


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Steve Stroh learned wireless TCP/IP networking as an amateur radio operator (callsign N8GNJ). He's one of the founding members of the Puget Sound Amateur Radio TCP/IP Group and is secretary for Tucson Amateur Packet Radio (TAPR), a national not-for-profit amateur radio research and development corporation that specializes in wireless digital communications.

Professionally, he's a NetWare and Windows NT administrator for a large company. He's done battle with UNIX a few too many times and mostly lost, so now he's learning Linux and BSDi in preparation for his next UNIX challenge. Steve lives in Woodinville, Washington (in the shadow of Redmond) with wife Tina and daughter Merideth. He can be reached at steve@stroh.pub.com.

It got me so steamed that my brain did something like declare a parity error, so I didn't record the article or print it. Later the memory came back after reading Jack Rickard's editorial in the June 1997 issue of *Boardwatch* on the colossal collective stupidity of the telephone companies in attacking any perceived threat to their revenue streams, especially US West's filing requests in its service territory to drop tariffs on "dry" telephone pairs originally intended for alarm company use.

I'm referring to an article in late May 1997 about the justification to continue subsidizing the real cost of providing telephone service in rural areas by adding a surcharge to the bills of all telephone customers. The quote that was so maddening to me went something like: "It's *tough* to provide telephone service in rural areas — that ground is *hard*." I hope someone recognizes the reference and lets me know the name of the article. Anyway, that's *why* we in the cities and 'burbs pay higher phone bills — because the ground is *hard* in the country. It is to laugh...if you're not already crying.

Here's the bottom line on the debate about rural telephony as far as I'm concerned. In rural areas, telcos shouldn't be stringing copper cables on poles for miles and miles to provide telephone service to a few dozen people per 25 square miles. It's the late nineties, and we could, and in almost all cases *should*, be using wireless communications technology instead. Wireless communication technology would be cheaper in the long term, and would be more effective. "Wireless installers" could simply drive up to a house, cut down the telephone cable at the pole, spend 20 minutes installing a wireless telephony system, and go to the next house. That's the way it *should* work. Let me explain why I think we're not there yet, and how this could be changed. Yes — there is a "moral" of this story relevant to ISPs.

A copper cable communications infrastructure is expensive. If it is installed per accepted practices, and left unmolested by weather or back hoes, it's reasonably stable and reliable for years. The aggregate profit of all the users of a typical urban or suburban telephone cable is somewhere between acceptable or slightly obscene depending on your particular view of telco profits.

A copper cable communications infrastructure is not only expensive, but unprofitable in a rural environ-

ment. First, there's a lot of it — long-distances between central offices and subscribers. Second, there are fewer subscribers to offset the expenses. Third, the hazards to copper cable in rural areas are worse than that of urban and suburban areas. Typically, rural copper cables are run overhead on poles rather than underground. They're alternately baked and frozen; they're swung back and forth by high winds; telephone poles are periodically struck and broken by wayward vehicles, etc. There's no real dispute that it's more expensive to maintain a copper cable infrastructure in a rural environment than in a urban or suburban environment.

That fact has long been recognized by the telcos, the various state regulatory agencies, and by the FCC. Subsidies are provided to the telcos to provide "universal service" — telephone services to rural subscribers that are equivalent to those provided to urban and suburban subscribers. With the universal service subsidies, the telcos make a profit providing rural telephone service, even with the aforementioned hazards. Except for emergency service, few really expect rural telephone service to be the equivalent of urban and suburban telephone service. After all, it's expensive to modernize with so few customers, and as long as basic telephone service is available, and reasonably reliable, everyone is pretty okay with this.

The trouble with this happy scenario is that the universal service subsidies have had the effect of fossilizing the use of a copper cable communications infrastructure in rural areas. The telcos are being paid by way of a subsidy that specifically offsets the additional expenses of maintaining a copper cable communications infrastructure in rural areas. Another "Rickardism" applies here: "Anything you subsidize, you tend to get more of." The state regulatory agencies are content with this arrangement — rural subscribers are being provided decent telephone service and the telcos aren't going broke providing it. Something was apparently lost along the way. The purpose of the universal service subsidy was to insure adequate *telephone service*, not necessarily to maintain a copper cable communications infrastructure. That's a subtle, but important difference.

Put another way, providing rural telephone service by means of a copper cable communications infrastructure was acceptable to all parties — until there was a better way to do it. Wireless is now a better way to provide rural telephone service.



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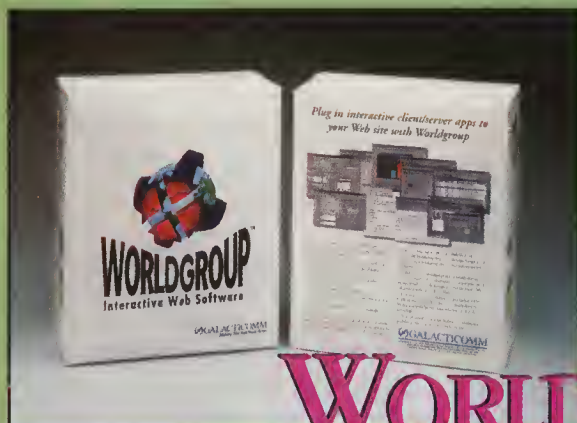
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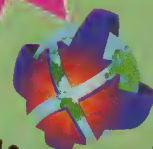
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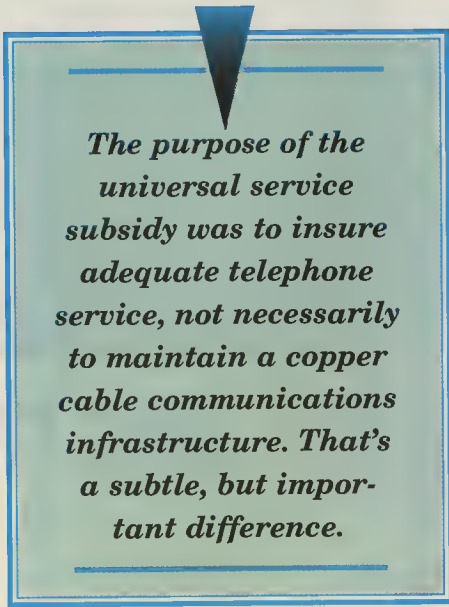
The benefits of cellular (wireless) mobile telephone service have long been recognized in the United States. It's less well known that cellular base stations are an ideal way to provide the equivalent of a "wired" telephone system — a fixed, wireless telephone service. Instead of a phone line coming to a home, there's a small "radio" on the house. In the house, there is the typical copper subscriber wiring connecting multiple telephones, faxes, etc. All of the big telco suppliers are in this business — Lucent, Northern Telecom (Nortel), Ericsson, Hughes Network Systems, Qualcomm, etc. In countries such as Russia and China, where "wired" telephone subscribers have been less than one percent of the population, wireless is the only communications infrastructure model that makes sense. It would take something on the order of the gross domestic product of some nations to create a wired communications infrastructure equivalent to that of the U.S. So, they're not doing that, and instead deploying wireless where it makes sense, and a wired infrastructure (always high capacity fiber optics) where it makes sense.

Wireless telephone service in rural areas of the United States is possible. It's being done now in other countries. The equipment is available off the shelf. Why is it not being done in the United States? Because the telcos are being paid, via universal service subsidies, to maintain the existing copper cable communications infrastructure. Subscribers are content — their phone bills are reasonable and the phone works most of the time. With the subsidies, there is no incentive for change.

The universal service subsidies have outlived their usefulness. If they were removed, then the price of rural telephone service would begin to rise toward the true cost of providing it via rural copper cable communications infrastructure. This would provide incentive for rural telephone customers to seek cheaper alternatives. There would then be a market for cheaper (than copper) telephone service — like fixed wireless telephone systems.

Without the Telecommunications Reform Act, the above paragraph would probably have been considered fantasy. Competition with the telcos is now legal and technically possible. Removal of the universal service subsidies would make competition for rural telephone service also financially possible.

The telcos providing service to rural areas will no doubt moan that, "cellular base stations are expensive, and they can only accommodate a few dozen simultaneous conversations at most." Any telco that utters that nonsense deserves a "Bzzt. Thanks for playing. You do not collect a franchise." The cellular companies didn't start converting their existing analog systems to digital because it was cool technology. Their motive was that there was only so much cellular telephone spectrum and they had more customers than they had air-minutes available. So Time Division Multiple Access (TDMA) and Group System Mobile (GSM) digital techniques were invented and they enabled the same amount of spectrum to support some multiple — an average of maybe six times as many users as the original analog cellular telephone standard.



The purpose of the universal service subsidy was to insure adequate telephone service, not necessarily to maintain a copper cable communications infrastructure. That's a subtle, but important difference.

Then came Qualcomm's Code Division Multiple Access (CDMA) — Spread Spectrum. CDMA took some serious power-salesmanship when it was first proposed. But people whose technical judgment I trust say that it is by far the superior cellular (and PCS) telephone digital modulation method. It works, it's digital, and it makes possible a minimum of a 12 times increase in the potential number of users.

One of the prime advantages that the cellular telephone concept has over previous mobile telephone systems is that the capacity of a cellular system can continually be expanded. Start with very big cells — maybe 20 square miles. When you get enough customers, drop the antennas on the existing base stations, put up a few more base stations,

and reduce the cells to 10 square miles. Continue repeating this process as additional capacity is required. It's not simple to do this, and it's expensive, but it's doable. More importantly, you can continue to provide service as your user-base expands, instead of eventually reaching gridlock as all available air-minutes are used and some significant part of your user base can't get service at any given moment.

There have been some impressive increases in technology since the cellular telephone system was invented. For instance, back then, digital signal processing (DSP) was only used by secret government agencies to try to extract hushed conversations from background noise, and it took a Cray supercomputer to do it. Now a battery-powered children's toy responds to simple verbal commands because its designer built in a cheap DSP chip with software that listens for the universal tonal patterns of certain "trigger" words.

If you factor in the use of CDMA, coupled with "smart" antenna systems, the result is a high capacity, cellular system that could easily cover a large rural territory. The expense and complexity of maintaining a copper cable communications infrastructure is eliminated.

As I discussed in my April 1997 column, installation of the "residence units" of a fixed wireless telephone system is pretty basic — just show up with the unit, cut the copper cables going to the pole, hook the cables to the radio box, plug the box into power of some kind (a solar panel and battery would make sense here), and point the antenna at the local cell site. Put the box in "find the site mode" and there will be an audio tone generated when the antenna is focused on the site. The installers don't have to be very talented — they don't even have to work for the telcos. This contrasts mightily with the highly specialized training that telco employees require — splicing new cable when there is a break is something of an art.

Of course, this whole scenario depends on the telcos doing the right thing and beginning a transition from a copper cable communications infrastructure to a fixed wireless telephone system. It's more likely that they won't do the right thing — it may be just so lucrative to continue to collect the rural subsidy, avoid providing "advanced" services like ISDN that require substantial investment, and charging mobile phone users

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So... if the telcos don't get their act together and provide fixed wireless telephone service in rural areas, then it won't get done... right?

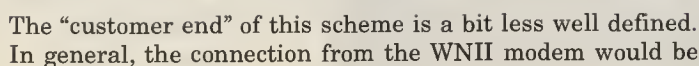
Don't get the connection? "Anyone" includes ISPs! "whatever purposes they see fit" includes providing telephone service.

That takes care of the links between ISP, er, “communications provider” and customer. What about changing the bits to voice? On the communications provider end, this should be pretty basic. Since T-1 is a telco standard, there has got to be a lot of equipment available that will slice and dice the voice bits on a “telco T-1” carrying 24 telephone channels to a “customer T-1” carrying two telephone channels. If you’re curious about this industry, then check out www.computertelephony.com, the web site for *Computer Telephony* magazine.

So now you're in the "communications provider" business and providing telephone dial tone and Internet connectivity to rural customers via wireless data links. Life's not all joy at this point. Telco reliability standards are astronomically higher than Internet service — as it should be since we began entrusting lives to being able to call 911 and betting our businesses on being able to receive calls and faxes from customers.

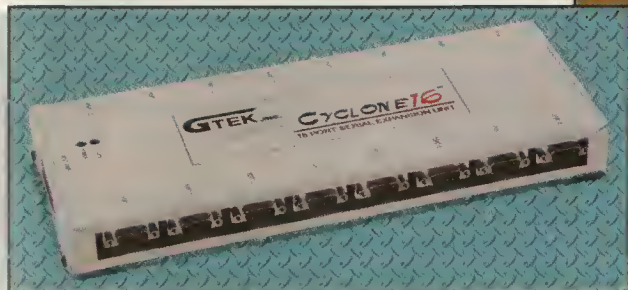
In the meantime, you've had WilTel or some other hungry long-distance carrier drop a "voice" T-1 or better onto your premises from their telephone network switch. At that point, what *you* do with *your* telephone numbers is *your* business. If you want to issue one of those new phone numbers to one of your "data" customers, cool.

Congrats! You've just fully implemented the fondest hopes of the Telecommunications Reform Act, and at some point may well become obscenely rich. Isn't America a really great place? ♦



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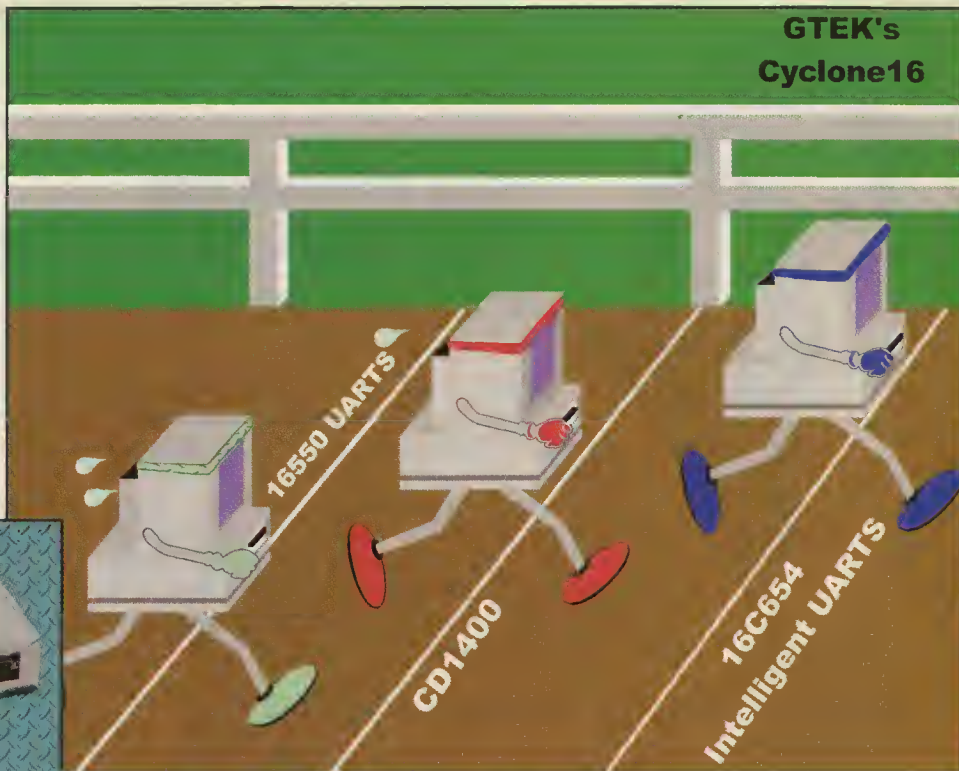


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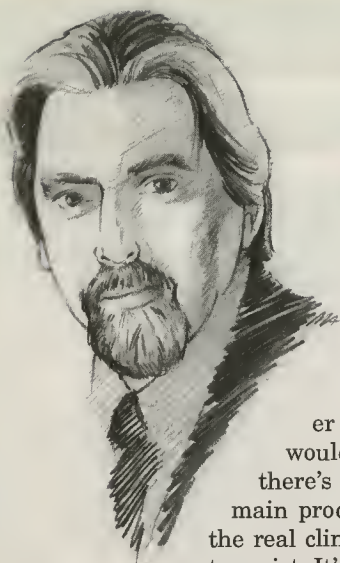
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A TALE OF TWO ISPs

Thom Stark is President of **Stark Realities**, an Internet business consulting firm based in the San Francisco Bay Area. He also conducts seminars and tutorials about the Internet at trade shows and for business and user groups. He is the author of the serialized online science fiction novel, *A Season in Methven*, (www.starkrealities.com/Methven) and is also a semi-regular panelist on ISP-TV's "State of the Net" cybercasts. Mr. Stark's e-mail address is thom@starkrealities.com and he maintains a non-commercial web site which focuses on IP internet-working technologies and policy issues at www.starkrealities.com.

We've all seen those late-night TV ads: "The combination rice steamer and pearl-handled nose-hair trimmer would be a bargain at **\$19.95**. But wait—there's more!" Regardless of what the actual main product is, it's the "there's more" part that's the real clincher. It's what makes the offer too sweet to resist. It's what motivates us to pick up the phone and dial that number where we are assured that operators are always standing by.

It's the added value that seals the deal.

Added value is what gives you the competitive edge to gain and keep customers, to thrive when your competition falters, to rise above the crowd and make yourself the winner. It's what gives you that crucial word of mouth referral when potential customers ask their friends and acquaintances for their recommendations.

In the world of Internet service providers, the prime examples have always been the traditional online services: AOL, CompuServe, Prodigy and, more recently, MSN. With their proprietary offerings, such as vendor forums, celebrity chats, games, and consumer and business services, they provide value that goes beyond a simple connection to the Internet. Still more daunting, from the perspective of those who define themselves more narrowly as pure ISPs, they can, via proprietary and value-added (there's that term again) networks, offer POPs nationwide and, increasingly, internationally.

All of which leads to the current wisdom on Wall Street that there's a massive shakeout coming in the ISP sector. The analysts keep telling us that the smaller ISPs just can't continue to survive on their own and that, after the bloodbath, there will be only a half-dozen or so mega-ISPs left, feeding like giant sharks on the swarming schools of helpless, choiceless customers.

It ain't necessarily so.

COME ON IN, THE WATER'S FINE

For a while there, especially during 1995, it looked as though becoming an ISP was a license to print money. All you had to do was to set up a T-1 connection to an upstream provider, hook it to a Linux box, a Portmaster and a few modems, install some phone lines, take out an ad and then sit back to watch the money roll in.

Once reality reared its ugly head, the folks who thought it was going to be easy wound up discovering that following a fad is no substitute for developing a sound business plan. Before that lesson hit home, they also learned that being an ISP—at least, being a successful ISP—is definitely not a hands-off business. Customer support (as every successful ISP knows) is enormously manpower-intensive. And it's not optional. Nor is staying ahead of the customer-demand/system capacity curve.

Providing a high level of service is easy when you have only a handful of customers. It gets a lot harder when your system is loaded to near-capacity. And, the day you have to make the jump from one server to two or more, it becomes next to impossible, because the complexity of network management and tuning increases as the square of the number of connected machines.

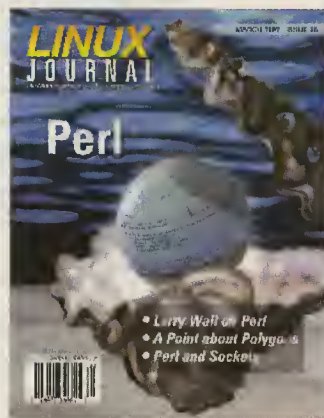
Since a lot of smaller ISPs don't start off with a networking systems background, that rule often comes as a painful surprise, particularly because so few of them have the luxury of piloting their multi-server upgrade in a laboratory setting before they take it live. Instead, they wind up working the bugs out of the upgraded system in front of God, their customers and everybody, often while their helpdesk phones are ringing off the hook with anxious customers wanting to know why their web browser, e-mail, news access, FTP, IRC, you-name-it isn't working (or, worse still, why they can't login at all).

Even a really big provider, such as Netcom, winds up hemorrhaging money (and causing service glitches) doing network expansion and system upgrades. Then there's the cost of billing, the cost of upgrading system software, the cost of providing security (had anyone hijack your SMTP server recently?) and the cost of hiring and training new staff. It all adds up to the sad truth that being an ISP is no magic money machine.

WHEN THE GOING GETS TOUGH, EVERYBODY LEAVES

With the industry seemingly standardized on a **\$19.95** monthly service fee, many ISPs have chosen to make their competitive stand on the basis of price. In my view, that's a slow, painful route to economic suicide, because, while it may bring in customers, it leaves those providers too underfunded to supply decent technical support or undertake system upgrades in a timely manner. As if that weren't bad enough, it attracts the least computer-literate, high-

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est-maintenance class of Internet users—the ones who never learned the truth of the adage, “You get what you pay for,” and the ones who need the most handholding, not only to get up and running, but to keep running.

Some down-market ISPs try to compensate by charging higher setup fees and by charging for tech support. Those strategies improve the economics of competing on price, but they sure don't increase customer loyalty.

Then there's the bigger.net strategy. Bigger.net is a San Francisco Bay Area ISP which charges a one-time **\$59.95** setup fee and a **\$10** annual fee for account maintenance. That's it. There are no other customer fees, period. How can they afford to make such an offer? Theoretically, by forcing their customers to use Netscape Navigator, which allows bigger.net to keep a Javascript window that continuously displays paid advertisements open as the topmost window on the customer's desktop. If the customer closes the window, it stops sending keep-alive messages to bigger.net and it unceremoniously boots him or her off the system. The idea here is that the ongoing cost of service is met by ad revenues and that (because bigger.net's customers are a captive market for its advertisers—and they represent a nice, juicy demographic) advertisers will be willing to pay bigger.net considerably more than they're willing to pay for web site ads that surfers can defeat by simply turning off image autoloading.

Does bigger.net have an economically viable strategy for the long term? It's too early to tell, since bigger.net is new enough to still be running on its initial infusion of *vulture* capital. There are certainly potential drawbacks to this approach: its cus-

tomers have no choice about which browser they use, (which could be a serious drawback when Windows 97, with its Internet Explorer as “the browser is the desktop” architecture is released), the overhead imposed by the continuous flow of advertisements noticeably reduces the customer's usable bandwidth, (further increasing the world-wide wait,) and, if the revenue stream from ads is insufficient, bigger.net could quickly find itself incapable of expanding its system capacity fast enough to meet the growth in customer demand. There's also the distinct possibility that some creative hacker will come up with a Netscape plug-in that will allow bigger.net's customers to spoof the keep-alive messages and close that all-important ad window. If that happens, bigger.net will get smaller in a hurry.

HELP, MISTER LIZARD!

Some ISPs have taken the opposite tack. Instead of competing on price, they've chosen to compete on service and, to fund that added service and weed out the lower-end customers, they've raised their prices. Netcom now offers its Netcomplete service to individual customers for **\$24.95** per month. It also offers global roaming (including international dial-up access) for an additional **\$6.95** per month, plus transaction and per-minute fees—a valuable capability for business customers who must frequently travel.

A San Francisco Bay Area regional ISP, Direct Network Access, Inc.(DNAI), charges dial-up users **\$25** per month and also charges **\$0.50** per hour for usage beyond 150 hours per month. Nonetheless, unlike Netcom, DNAI regularly comes in at, or near, the top in customer satisfaction surveys.

What's their secret?

First of all, DNAI doesn't make customers who call for support wait on hold as toll charges pile up. Instead, they take the customer's number and call him/her back, usually within an hour or so. Second, DNAI seldom confronts its users with busy signals. When customer demand increases to the point that all their modems are routinely busy, they add new Portmasters and modems to the pool. DNAI was also among the earliest Bay Area ISPs to support USR's 56 Kbps x2 technology. Third, they add value.

Instead of merely providing Internet access, DNAI provides additional services that increase the value of their users' accounts. All dial-up users also get shell access with or without a menu, as they prefer. DNAI runs its own chat server and provides a Kali server for their users at no cost beyond the **\$20** Kali charges for its software. The Kali server spoofs an IPX network connection over dial-up IP, permitting multi-player games designed for LANs to be played over the Internet. DNAI gives every user 50 MB of server space for personal web pages and FTP directory. They provide pre-built CGI and HTML “snippets” for cut-and-paste inclusion in user web pages, including searchable indexing, a counter, a CGI form that mails entered data to the user and a password authentication snippet. They also provide user web site traffic statistics, connect-time tracking, and status reports for every machine on DNAI's own network. All this stuff is included in that **\$25** monthly fee.

THEN THERE ARE THE LIZARDS

Lizards are DNAI's good-natured answer to the Windows-world's Wizards. To begin with, there's the Signup Lizard, which makes it easy to create or change a dial-up or ISDN

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IN AN
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EASY-TO-USE
MANNER.”

WASHINGTON
TIMES

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www.looksmart.com/lsn/

account. There's the Password Lizard. There's also a domain name registration Lizard which permits users to painlessly register a DNAI-hosted virtual domain for a one-time setup fee of \$50 (in addition to the Internic's own initial and annual charges, of course).



Finally, there's the i-Pass Lizard, which walks users through sign-up for I-Pass (www.ipass.com) — a worldwide alliance of local ISPs that permits them to offer access to global roaming service, just as Netcom does. And DNAI charges only \$2.50 per month (plus fees imposed

by foreign access providers) in any month that the service is used, by contrast with Netcom's \$6.95.

BUT WAIT! THERE'S MORE!

The i-Pass alliance is a pointer to how the little fish can combine its individual strengths to compete on equal footing with the mega-ISP's and the online services in ISP's clothing. DNAI's Lizards are another. Both things point to adding value as the key for ISPs not only to survive, but to thrive in the face of what Wall Street believes to be overwhelming competition.

DNAI has learned that lesson. Netcom, seemingly, has not. The former is making sufficient money to be able to finance its expansion out of cash flow. The latter is spending money hand over fist and draining dry its cash reserves in the process. One has a great reputation for outstanding service. The other has quite a different sort of reputation.

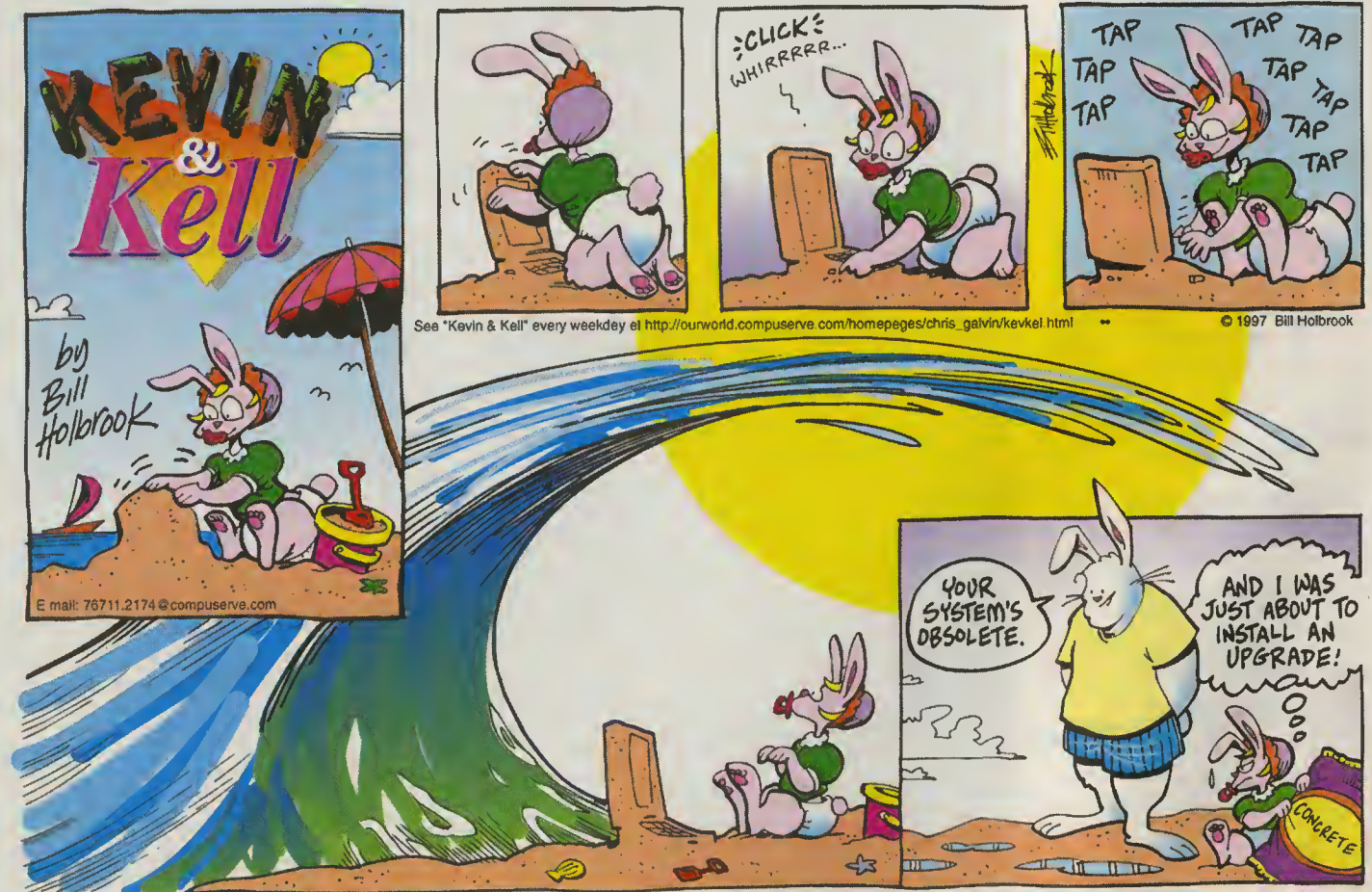
DNAI has paid attention and looked for ways to increase the benefit to its users sufficiently to make its service a compelling value. They have not, however, even begun to exhaust the possibilities.

For instance, they could grant their users access to the M-Bone, enabling them to view live coverage of Space Shuttle launches and myriad other IP multicast-only offerings. They could provide a RealAudio server for users' web pages, enabling them to offer streaming audio from their home pages. They could offer advanced network consulting (actually, DNAI does a little of this already) to corporate customers, offer discounts on HTML authoring software for which they've arranged with the manufacturer to become distributors or set up a service to submit users' URLs to the major search engines.

Heck, they might even consider getting into the domain name registration business themselves, now that the Interim Policy Oversight Committee for the seven new top-level domains has decided to drop the lottery and let any qualified applicant become a registrar.

They could do any combination of the above. And so could you.

Now, how much would you pay? ♦



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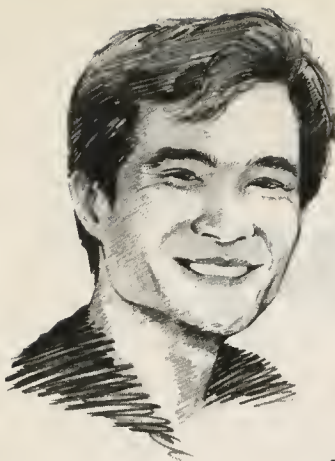
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*"Boy oh boy,
those web folks sure
go for mapping!"*





Notes From The Underground by Wallace Wang

GETTING THE MESSAGE OUT: HACKING A WEB SITE

Graffiti has always been a cheap and popular form of personal expression for the oppressed. While most graffiti artists use spray paint to deface billboards or leave their mark on walls or freeway overpasses, graffiti has also found its way on to the Internet as well.

Wallace Wang is the author of *CompuServe For Dummies*, *Visual Basic For Dummies*, *More Visual Basic For Dummies*, *Microsoft Office 97 For Dummies*, and *More Microsoft Office 97 For Dummies*.

When not working with computers, he performs stand-up comedy and has appeared on A&E's *Evening at the Improv* TV comedy show. He can be reached via e-mail at 70334.3672 @compuserve.com, bothekat@aol.com, bo_the_cat@msn.com, Or bothecat@prodigy.net

Rather than create their own web site, the more technically skilled hackers simply deface an existing web site, usually to poke fun at a particularly lame corporation or to make a political statement against a specific government agency, such as the Central Intelligence Agency or the U.S. Department of Justice.

Altering a web site requires getting access to the computer that contains the targeted web pages. Since the targeted web site must be connected to the Internet, hackers simply access the computer through the World Wide Web, take control of the operating system as if they were physically at the web site computer, and then modify or replace the existing web pages.

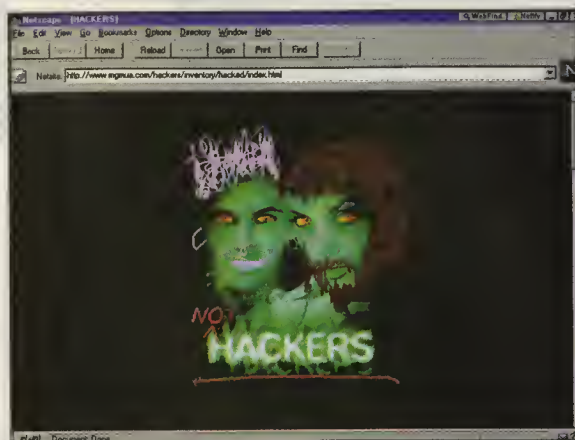
To see examples of web sites that have been hacked in the past, visit *2600 Magazine's* web site at (www.2600.com/hacked_pages), or follow these steps:

1. Visit the Yahoo (www.yahoo.com) search engine.
2. Click on the Computers and Internet category.
3. Click on the Security and Encryption category.
4. Click on the Hacking category.
5. Click on the Hacked Websites@ category. From here you can view different hacked web sites.

"HACKERS" THE MOVIE WEB SITE

Computer hacking already frightens most of the general public who believe that teenagers with personal computers could actually cause more damage to society than the politicians in office already do. So it's no surprise that Hollywood dumped a rash of hacker-related movies on a gullible public in an attempt to cash in on this craze. Along with movies like "The Net" and "Sneakers," Hollywood soon gave us "Hackers."

As part of the publicity campaign surrounding this movie, Hollywood created a "Hackers" movie web site. Not surprisingly, this web site soon got vandalized by real hackers who felt that "Hackers" portrayed them as accurately as White House politics actually reflects the will of the people. The vandalized web site read:



Hackers, the new action adventure movie from those idiots in Hollywood takes you inside a world where there's no plot or creative thought, there's only boring rehashed ideas. Dade is a half-wit actor who's trying to fit into his new role. When a seriously righteous hacker uncovers MGM's plot to steal millions of dollars, Dade and his fellow 'throwbacks of thespianism,' Kate, Phreak, Cereal Killer and Lord Nikon, must face off against hordes of hackers, call in the FBI, and ponder a sinister UNIX patch called a 'trojan.' Before it's over, Dade discovers his agent isn't taking his calls anymore, becomes the victim of a conspiracy, and falls in debt. All with the aid of his VISA card. Want the number?

What Kool-Aid was to Jonestown...What the 6502 is to the Cellular Telephone Industry, 'Hackers' is to every Cyberpunk movie ever made. Check out the site and see for yourself.

**KNOWLEDGE ISN'T FREE
DON'T HACK THE PLANET
DON'T SEE HACKERS
IT SUCKS
BUY 'TEACH YOURSELF C IN
21 DAYS' INSTEAD**

THE U.S. DEPARTMENT OF JUSTICE

On August 17, 1996, someone hacked the Department of Justice's web site to protest the passing of the Communications Decency Act, which was another government attempt to impose more regulations on a

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reluctant and unwilling world of Internet users. Besides altering the graphics to include a Nazi swastika and a cartoon voice balloon of George Washington saying, "Move my grave to a free country! This rolling is making me an insomniac!", the web site also displayed the following text:

NOTE: This World Wide Web server is currently under destruction.

As the largest law firm in the Nation, the Department of Justice serves to punish all who don't agree with the moral standards set forth by Clinton™. We are a bureaucratic assembly of lawyers, politicians, and criminals (I repeat myself) and are privately owned by the nation of Japan. We operate by enslaving our citizens with taxation. We hate all the Mexicans that swim into our country and take our jobs. We censor our slaves and punish them severely for disobeying. We are greater than God. Anything and anyone different must be jailed.

BIG BROTHER IS WATCHING YOU! WE ARE BIG BROTHER! HAIL YOUR NEW MASTER!

CONSTITUTIONAL RIGHTS TAKEN SO FAR

- 1st Amendment
- We have Freedom of Speech?
- 2nd Amendment
- We can bear Arms?
- 4th Amendment
- We have Privacy?
- 8th Amendment
- 100,000\$ isn't excessive Bail?

Free speech in the land of the free? Arms in the home of the brave? Privacy in a state of wiretaps and government intrusion? Unreasonable searches? We are a little behind our 1984 deadline, but working slowly one amendment at a time. It is hard to trick hundreds of millions of people out of their freedoms, but we should be complete within a decade. Here is a list of some of our accomplishments.

ACCOMPLISHMENTS

NET CENSORSHIP!

- President Clinton's Speech on Affirmative Action - 7/19/95
- Violence Against Women Organization

EVIL WORKS OF THE ANTICHRIST

Internet Declaration of Independence

TOP 10 REASONS FOR SUPPORTING THE COMMUNICATIONS DECENCY ACT

- 1.If you show disagreement you will be prosecuted.
- 2.Wait, I never liked [CENSORED]
- 3.New ideas are of the devil.
- 4.Dole said it would help the economy.
- 5.Who really needs to use words like f%&k and s#%t.
- 6.You were tired of foreigners asking for pictures of your girlfriend.
- 7.You were moving to a free country anyways.
- 8.Because Gingrich said so.
- 9.Damn reds are behind it!
- 10.You can always get your porns right here!

Congress shall make no law respecting an establishment of religion, or prohibiting the free exercise thereof; or abridging the freedom of speech, or of the press; or the right of the people to peaceably assemble, and to petition the government for a redress of grievances.

NASA

When it comes to hypocrisy, the United States government has already established a long record of abuses ranging from proping up oppressive dictatorships in Third World countries (while professing to support "freedom," "democracy," and "human rights") to supporting drug cartels while spending billions to declare a futile "war on drugs" at home.

Not surprisingly, other government web sites have quickly come under attack. On December 16, 1996 and March 6, 1997, someone hacked the NASA web site to protest the growing commercialization of the Internet. The December web site hack contained a naked woman posing as Santa Claus while the March 6 hack contained the following text:



THE COMMERCIALIZATION OF THE INTERNET STOPS HERE

KEVIN MITNICK IS CURRENTLY IMPRISONED FOR NOTHING MORE THEN HIS CURIOSITY AND DESIRE TO LEARN. KEVIN HAS BEEN ROTTING IN A PRISON CELL FOR 2 YEARS AND STILL HASN'T GONE TO TRIAL.

ED CUMMINGS WAS THROWN IN PRISON FOR POSSESSING NOTHING OTHER THAN A COUPLE PIECES OF ELECTRONICS FROM RADIO SHACK. HIS COUNTRY DESTROYED HIS LIFE. WHILE IN PRISON CUMMINGS WAS SUBJECTED TO POOR PRISON CONDITIONS AND TREATED AS IF HE WERE A MURDERER.

The injustice doesn't just end with Kevin Mitnick, there are others who have been targets of the government. Ed Cummings (aka BernieS) went to Prison for possessing a timing crystal (used in various electronic devices and can be purchased at Radio Shack) along with a Tone Dialer (also obtainable at Radio Shack). If you put these two things together in the right way, it is possible to use this device to trick the phone company into believing that you inserted a quarter into a payphone. Mr. Cummings never had these parts combined, and therefore never committed any crime. But NO, the government said he committed a crime, and what happens? He goes to prison because they say so. It wasn't hard to see that things



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It allows you to create multiple service levels. (Think Platinum, Gold, Silver... you get the idea.) You can actually tier your product offerings based on bandwidth guarantees. The better you can differentiate your product from the competition, the better the result. PacketShaper structures your bandwidth into truly productive price and performance tiers for increased profitability and continued customer satisfaction.

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were going wrong for Mr. Cummings. A person being charged with manslaughter got bail set substantially lower than Mr. Cummings. Is it just me or does that sound ridiculous?

You can blame us
Make every attempt to detain us
You can make laws for us to break
And "secure" your data for us to take
A hacker, not by trade, but by BIRTHRIGHT.

Some are born White, Some are born Black
But the chaos chooses no color
The chaos that encompasses our lives, all of our lives
Driving us to HACK
Deep inside, past the media, past the government, past
ALL THE BULLS#%T:
WE ARE ALL HACKERS

Once it has you it never lets go.
The conspiracy that saps our freedom, our humanity,
our stability and security
The self-propagating fruitless cycle that can only end
by force
If we must end this ourselves, we will stop at nothing
This is a cry to America to GET IN TOUCH with the
hacker inside YOU
Take a step back and look around
How much longer must my brothers suffer, for crimes
subjectively declared ILLEGAL.

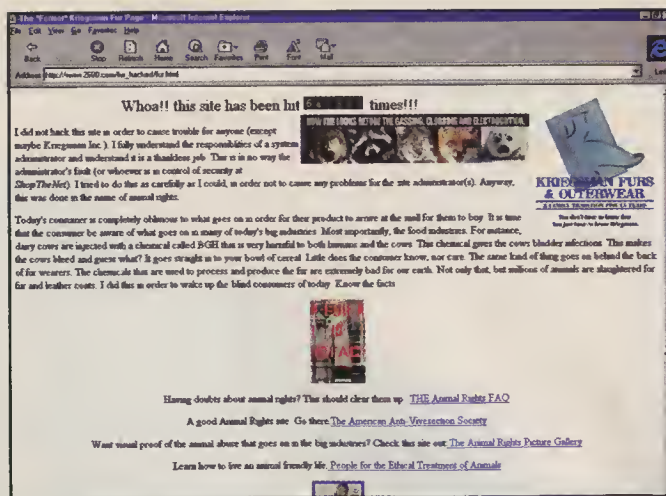
All these f&*king inbreds in office
Stealing money from the country
Writing bills to reduce your rights
As the country just overlooks it
PEOPLE OF AMERICA:
IT'S TIME TO FIGHT.

And FIGHT we WILL
In the streets and from our homes
In cyberspace and through the phones
They are winning, by crushing our will
Through this farce we call the media
Through this farce we call capitalism
Through this farce we call the JUSTICE SYSTEM
Tell BernieS and Kevin Mitnick about Justice

This is one strike, in what will soon become *MANY*
For those of you at home, now, reading this, we ask you
Please, not for Hagis, Not for your country, but for
YOURSELF
FIGHT THE WHITE DOG OPRESSOR
Amen.

KRIEGSMAN FUR

United States government organizations aren't always the target of hackers. In November 1996, an anti-fur activist hacked the Kriegsmann fur web site as a different form of political protest. The hacked web site now displayed the following text:



I did not hack this site in order to cause trouble for anyone (except maybe Kriegsmann Inc.). I fully understand the responsibilities of a system administrator and understand it is a thankless job. This is in no way the administrator's fault (or whoever is in control of security at ShopTheNet). I tried to do this as carefully as I could, in order not to cause any problems for the site administrator(s). Anyway, this was done in the name of animal rights.

Today's consumer is completely oblivious to what goes on in order for their product to arrive at the mall for them to buy. It is time that the consumer be aware of what goes on in many of today's big industries. Most importantly, the food industries. For instance, dairy cows are injected with a chemical called BGH that is very harmful to both humans and the cows. This chemical gives the cows bladder infections. This makes the cows bleed and guess what? It goes straight in to your bowl of cereal. Little does the consumer know, nor care. The same kind of thing goes on behind the back of fur wearers. The chemicals that are used to process and produce the fur are extremely bad for our earth. Not only that, but millions of animals are slaughtered for fur and leather coats. I did this in order to wake up the blind consumers of today. Know the facts.

Learn how to live an animal friendly life. People for the Ethical Treatment of Animals.

EAST TIMOR CAMPAIGN

For those who feel threatened that good ol' American hackers would dare question the authority and actions of their own government or corporations, you might feel more comfortable viewing altered web sites in another country.

On February 10, 1997, and again on February 14, 1997 Portuguese hackers launched a political attack on the web page of the Indonesian government, focusing on that country's continued oppression of East Timor.

(What? You never heard about oppression in East Timor? It couldn't be because American newspapers and television reports ignore it in favor of reporting the latest football scores to a complacent American public? Naw!)

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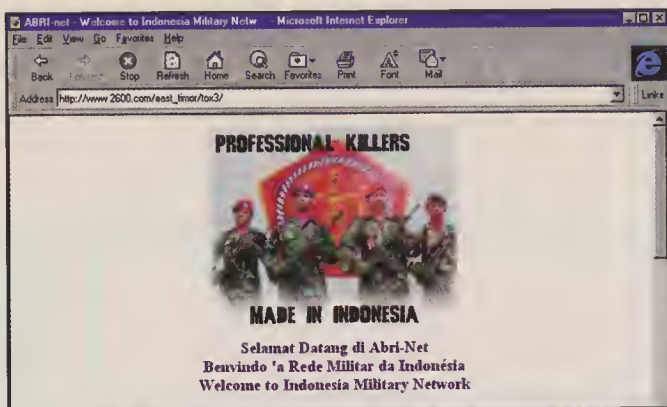
Paradyne. Get on with it. www.paradyne.com or 800Paradyne

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Part of the text from the altered web site appears below:

We hope to call attention to the necessity of self-determination and independence of the people of Timor, oppressed and violated for decades by the government of Indonesia. We hope you give your full attention to this historical step towards freedom, we ask that you help us fight the tyranny of Indonesia occupying Timor.

The East Timor Campaign was initiated on 02-10-97 with our first target being www.dfa-deplu.go.id. The attack was online for about 3 hours from 7.00 pm to 10.00 pm (Portuguese Time) at the web site of the Department of Foreign Affairs, Republic of Indonesia. We didn't delete or destroy anything there, we just hack they're pages. Stay tuned for more developments.

CONCLUSION

Most hackers alter web sites, not just for the pure joy of breaking into another computer, but to express a political opinion. According to Project: Censored (<http://zippy.sonoma.edu/ProjectCensored>), the United States government is allowing private industries to control the Internet, which means that objective information on the Internet may soon become as scarce as objective information coming from our TV, radio, and newspapers.

While altering a web site can be a nuisance or embarrassment to the organization running the web site, think twice before condemning the work of hackers as a group of malicious people intent on committing crimes and destroying the world. Governments want people to view hackers as a threat so they can impose more regulations on everyone as a result. While you might not agree that hacking a web site is a proper form of expression, watch out because it may soon be the only way to express an alternate opinion in the future if we're not careful. ♦

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The PowerRack also has the standard feature list: dial-in/dial-out access, a powerful RISC CPU, Ethernet connectors, ISDN capability, PPP, SLIP, CSLIP, *bootp*, *rlogin*, *telnet*, reverse *telnet*, PAP/CHAP authentication, RADIUS II, RIP II, SNMP MIB II, subnet routing, IPCP DNS exts. for Windows 95, and IP filtering.

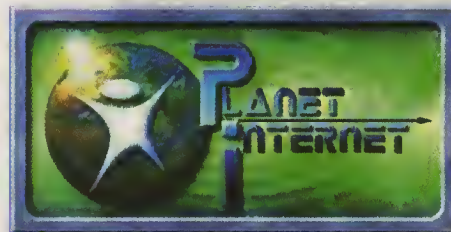
PowerRack user and Internet Service Provider Michael Behrens, of InterNet Kingston (mbehrens@kingston.net), commented, "The PowerRack is an attractive product, both in its ability to do the job well and to do the job... cost effectively. Port for port costs are significantly lower than the Livingston Portmaster. The product lives up to its name... performance under load is exceptional! The PowerRack also offers a significant feature for feature comparison against the available competition (i.e. Livingston Portmaster). And, technical support was extremely knowledgeable and responsive."



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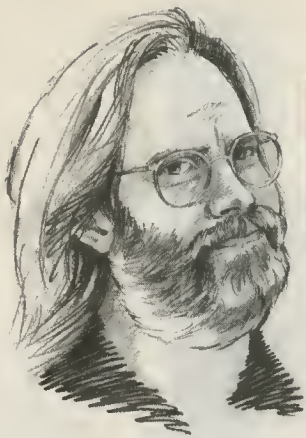
Additional Information

If you have any information you would like to share with us, please send us mail at:

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Denver, CO 80231

Phone: (303)306-9673
Email: marketing@plinet.com
<http://www.plinet.com>





Java Jitters

by Doug Shaker

WRITE ONCE, RUN ON WINDOWS— UNTIL WE CHANGE THE API

Well, Microsoft is still hard at work, trying to turn Java from a portable software platform — “Write once, run anywhere” — into a really nice programming language for Windows — “Write once, run on Windows until we change the API.” They are doing this subversion the right way, though. Their next release of Visual J++ should be a doozie. It includes a fantastic debugger, an object-oriented design tool, and a series of tools that make it very easy to program. But the code it produces will only run on a Windows machine. This tempting pile of add-ons is, of course, a software tactic as old as the hills. “Oh, yes, our COBOL compiler is fully ANSI compliant. We have, however added some extensions to make your life easier.” And, if you use those extensions, then porting to another OS will be a massive pain in the butt, roughly as desirable as surgery with a butter knife.

Continuing in that historic tradition, Microsoft has just released a beta version of J/Direct. J/Direct is software that gives a Java programmer, working under Windows, access to the entire Win32 API. This is seductive because Windows is a reasonably mature operating environment and Java is not. For example, Windows has full-on printing services and Java does not. This isn't much of a problem if you are just printing text. It is pretty easy to print simple text without printing services — just pipe the output to the printer. However, printing graphics without printing services is complicated dreck that can tie you down for months. J/Direct would, for one, give you access to the Windows print model.

Then shouldn't I be happy that J/Direct is around? No, not really. Microsoft wisely sees Java as competition to the Microsoft operating system near-monopoly. After all, if all programs will run on any operating system, why would anyone want to stick to using Microsoft operating systems? Make no mistake, Java is a very real threat to Microsoft's domination of operating systems and Microsoft would like nothing better than to turn it into just another programming language.

If Microsoft wanted Java to remain a real cross-platform tool, then the right response to the printing services problems would be to propose a printing API that could be implemented across platforms. Of course, if Microsoft were to make such a proposal, I am sure the API would describe a set of services remarkably like Windows print services. But Microsoft wants Java to remain a language, not an operating platform, so they produce J/Direct instead. Here's all of our nifty OS features, in Java APIs, right

now. They won't port to another OS, but you don't need another OS, do you? Want some candy, little girl?

ACTIVEX FAILING

It's nice to see that the programming public has some sense. In past columns, I have taken a look at ActiveX. Microsoft claims it is a distributed object standard, but it really is just a tired extension of an extension of an extension of DLLs. Microsoft claims it's a standard because they gave some part of the specification to a non-profit and because some of the more desperate of the old minicomputer manufacturers are implementing it on their machines. Oh, please — it is a Windows-only technology and everyone knows it.

The positive side of things is that no one seems to be actually using ActiveX, except Microsoft. I turned off ActiveX downloading on my web browser and the only place it matters is on — you guessed it — www.microsoft.com. International Data Corporation, the market research company, did a survey of 20 million web pages. Out of that 20 million, less than 1,000 used ActiveX. That, my friends, is less than 0.005 percent. If that doesn't constitute market rejection, I don't know what does.

JAVA TAKES OVER SMALLTALK

Smalltalk is a nifty, platform-independent programming language that preceded Java. In fact, some people — myself included — describe Java as “Smalltalk semantics, C syntax.” ParcPlace was the major manufacturer of Smalltalk. Not only was ParcPlace's Smalltalk a mature object-oriented language, it had a platform independent virtual machine years and years ago. If the ParcPlace management had understood what was going on with the Internet in the same way that Sun did, ParcPlace could have released their virtual machine to the Net and they would have owned the niche now filled by Java. However, ParcPlace management spent most of the nineties with their heads firmly placed in the 1950s or, alternately, where the sun don't shine. When the great Internet explosion started, and Sun started to give away Java, ParcPlace was — get this — charging runtime fees for Smalltalk programs.

Bear with me — I have to vent a little here. I was doing computers in the early seventies when the Basic suppliers were trying to charge runtime fees. Let me tell you, it was stupid *then*. The license restrictions were unenforceable, no one paid the fees, and the first time one of the language vendors broke ranks, all the

Doug Shaker is a freelance technical writer in California.

He has one wife, two children, three pets, and five computers. The computers are obviously out of hand.

He can be reached via e-mail at <mailto:doug@theshakers.org>. Yes, that is a personal Internet domain. We told you the computers were getting out of hand.

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To join our ISP Program as an authorized distributor, just download the Eudora Light™ Distribution Agreement at www.eudora.com/3isp or call (800) 2-EUDORA ext. 29770. You can also email us at eudora-salesisp@eudora.com.

Once we've received your signed agreement, you will be ready to distribute Eudora Light software. And when your customers purchase powerful Eudora Pro software, you'll start earning some serious cash.



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QUALCOMM

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developers stampeded to that language. I worked for an artificial intelligence company in the eighties that tried to charge runtime fees. It wasn't any smarter then. Fifty percent of the users never finished their applications. Of the remaining fifty percent, no more than 10 percent needed runtime licenses, and most of them needed no more than three or four. Finally, the runtime fees were 10 percent of the development license fees. Out of **\$100 million** in software and service sales, I don't think we collected more than **\$100,000** in runtime fees. In other words, we didn't collect squat in runtime fees. However, the runtime fees sure messed up a lot of sales for us. My guess is that they killed **\$20 million** in license fees for us. Runtime fees are *bad business*. Sun figured that out in time, Parcplace didn't. ParcPlace's board finally got rid of the man in charge of that disastrous period of ignorance, CEO Bill Lyons.

ParcPlace seems to have decided to remake itself as a Java company. They now sell PARTS for Java — a rapid application development environment for Java. They also bought Objectshare, another Smalltalk company, when it started to sell a visual component set for Java. Now ParcPlace is trying to hawk Smalltalk-Java software bridge called *Frost*. Frost lets Java programmers call Smalltalk components. This is logically a good idea as there are a fair number of such components. The components are useful, well-tested, well-designed, and portable across platforms. And, *now*, the Smalltalk virtual machine is free. Still, it seems unlikely that Frost will do anything to undo the damage that the years of marketing ignorance did. In my view, it's a pity.

In other Smalltalk to Java news, Microsoft has just bought Cooper & Peters — a software supplier that I know from my Smalltalk days. These guys built the first attractive, and usable, user interface toolkit for Smalltalk. They sold that off to another company, then wrote a Smalltalk programmer's editor that was so useful and effective that the purchase decision was a no-brainer — nearly everyone that tried it bought it. When Smalltalk started to lose ground to Java, Cooper & Peters switched to doing a set of Java components called *EyeOpener*. Now Microsoft has bought them and claims they will put them to work building Java components. I'm happy for them — both Cooper and Peters are really nice guys and they deserve to make some money for their years of hard work. I am not so happy for the rest of us. Microsoft's

candy is going to become prettier and sweeter when those guys get to work.

CAN YOU DO JAVA DEVELOPMENT ON A MACINTOSH?

For years, Apple built one of the most advanced computing environments available. There is a lot of truth to the saying that Windows 95 has about the same capabilities as the Macintosh did in 1987. In some ways, the Mac is still the better platform — better integrated, smoother, more intuitive. In some ways, Windows has the edge — easier to integrate with the rest of the world, better multi-tasking under NT. Still, all things considered, it was easier to be a Mac user than it was to be a Windows user.

But can you be a Java programmer on the Mac? Well, it is beginning to look like the answer is no. Sun is committed to releasing their Java Development Kits on three platforms — Sun Solaris, Microsoft Win32, and the Macintosh. All well and good, but the Mac version always seems to lag the other two by a lot. Java 1.1 has been available in beta on the Sun and on Windows since December 1996. Is it available on the Mac, even now? Not as I write, though it may be available in beta by the time that you read this.

This kind of delay might be okay for someone who is building an applet. After all, there are hardly any browsers available which are Java 1.1 enabled. However, the delay is intolerable for someone building a software toolkit or an application. Could it be fixed? Sure. There is already a Java 1.1 port for Linux (see below for details and a URL). But don't you think it is strange that hobbyists, working for no pay, at night and on weekends, can do the port faster than a company of full-time paid engineers? Well, the reason is that Apple hasn't made it a priority. If there had been twelve Apple engineers camped out in the Javasoft building at Sun, porting all of the incremental internal releases that preceded the December release, then there would be a Mac port available on the same day as the final Sun version.

What does this mean? It means that Apple management doesn't really have a clue about Java and isn't likely to get a clue anytime soon. If the Apple board cuts CEO Amelio loose and puts Steve Jobs in charge, something might change. Jobs is an abrasive, aggressive, unpredictable manager, but he understands the needs of developers like no one else. But it isn't clear if Jobs wants the job and it isn't clear if he could do the fiscal

and marketing tasks that go along with being CEO. I don't see a better savior on the horizon. Until something changes, Apple is a dying company and I certainly wouldn't plan on doing Java development on a Mac.

JAVA TIDBITS

I really like Linux, the freeware UNIX clone. When I had my own web server, it ran under Linux and the uptimes were amazing. Thirty days without a boot or downtime was standard and I sometimes went sixty or ninety days without problems. If you are another Linux devotee and would like to get Java 1.1 for your Linux box, then take a look at www.blackdown.org/java-linux/Mirrors.html and you should see a list of places to get it. This is a freeware Java 1.1 development kit.

If you run a web site where you need a chat room, take a look at the technology offered through www.suresite.com. They have a Java implementation of a chat room that can run as an applet on your web page. My personal experience with chat rooms is pretty boring. I look at the transcripts and they always look something like this: "[Elmo enters] Lou: 'Hi Elmo!' Joe: 'Elmo! What's up!' Elmo: 'hi.' [Toby enters] Lou: 'Hello, Toby.' Elmo: 'hi toby.' Joe: 'Toby! What's up!' [Elmo leaves] [Tarzan enters]" and so on. They seem to be entirely content-free conversations, suitable only for Alzheimer patients. However, I may just be hanging around the wrong URLs. If your web site needs a chat room, check out the Sure Site software.

STUPID INTERNET TRICKS

Microsoft has set up a so-called Internet summer camp for children. Supposedly you pay **\$95** and Microsoft provides interesting enough content — some involving real humans — that your child will feel compelled to spend all day glued to a cathode ray tube while you go off to work. Yeah, sure, that's *exactly* what I want my son doing — some dumb Internet junk — all day while I'm away at work. While you are at it, will you teach him to smoke, cuss, lie, and believe press releases too? They probably won't have too many takers, though. I tried to find the camp or an ad for it from the main Microsoft site. The Microsoft search engine gave me four references to "Web summer camp," all of which looked like ads. However, when I tried to look at them, all of the pages were inaccessible. Slick, eh? I guess inaccessible ads is a concept whose time has come. Maybe there is hope that Microsoft won't take over the universe. ♦

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STREAMING MEDIA by Doug Mohnhey

THE FUTURE STARTS TODAY INTERNET BROADCAST — YEAR 0 TO YEAR 3

Doug Mohnhey was employee #10 at DIGEX. He has learned, and forgotten, a lot about help desk support, competitive intelligence, sales and marketing, leased-line service ordering, telco service, and public relations. He makes no pretenses at understanding anything more about the technical side of IP other than being able to get a PPP account working.

His writings have been published in *LA View*, *Washington Technology* and the *Washington Post*. Doug receives e-mail at moo@clark.net

Quality, live, real-time Internet broadcast video, delivered to a large audience, is truly the “final frontier” in terms of technology. Once an Internet service provider conducts an Internet video broadcast which delivers 24 frames per second color video at 648 x 480 resolution (i.e. in the quality of a VGA monitor at old fashioned analog NTSC video rates) without glitches or lags, to an audience of 10,000 viewers spread across the Internet, watching from the privacy of their own homes (rather than from the T-1/T-3 luxury of work), there’s not going to be much left to do in terms of PC computer hardware, software, or bandwidth delivery.

The combined technogeeks of Microsoft, Intel, Progressive Networks, and a dozen national ISPs can’t do it today. That’s the bad news.

The good news is that we — using the royal “we” to group together the collective technogeeks listed above — should be able to do this within 3 to 5 years. Basically, if you’re in the live Internet webcasting biz, we’re in year 0, with Netscape 0.9beta, a 14.4 Kbps modem, and first generation Pentiums and PowerPCs. We need across-the-board improvements in the coming years in three areas: hardware, software, and affordable bandwidth to the home. However, there are a bunch of reasons to get involved with Internet broadcast technology at the beginning of the curve, rather than toward the end.

Computer hardware advancement is the easiest technology curve to anticipate. The current higher-end Pentium (166 MHz or faster) and PowerPC (200 MHz or faster) machines are pretty capable of doing some impressive heavy lifting. There is a prototype DVD player floating around which is nothing more than a souped-up CD player with a processor decoding the data and feeding it to some digital-to-analog gizmo which is labeled “video out” which connects to a TV. Some tweaking and fine tuning needs to take place, but even looking at 3 years down the road, we should have computer power to spare to decode and encode video. Build in an interface to connect the box to the rest of the world at high speeds — be it something sexy and over-hyped like USB or Firewire, or the more mundane, but still capable Ethernet (10 Mbps) or Fast Ethernet (100 Mbps)— and we’re set.

Software presents several individual categories which need work. Certainly, the folks at Microsoft and Progressive Networks know they’ve got a couple of iterations of code to go through as they perfect codecs

to compress and decompress video without losing too much quality, but the browser/server people aren’t the only ones who are going to have to work. IP multicast, the ability to send one copy of information to a whole bunch of people, has to proliferate and improve in monitoring and robustness. Further down the food chain, ...er... ISO layering model, routing software is going to need a couple of iterations so that some combination of guaranteed quality of service can be assured between a video server and individual viewers and/or tools to reserve bandwidth when necessary to transmit live video from an event to a centralized server for distribution. Certainly, there’s a lot of talk about RSVP and QoS capabilities in the mainstream trade mags, but widespread use in the industry? Not today. A solution or two should shake out within three years, even given the politics involved.

Finally, the biggest hurdle will be affordable bandwidth to the home. Sure, 56 Kbps analog modems are available today, but they’re not *really* close to 56 Kbps unless the planets are in perfect alignment for the dial-up connection. There’s ISDN, which has evolved from an installation mystery to a mere pricing muddle in the good ol’ United States. Besides, ISDN barely provides 128 Kbps, and home viewers are going to need at least 384 Kbps for quality delivery; probably more if they want to ask questions in real-time using *their* video equipment.

Believe it or not, you can have a T-1 run to your home. Many of the Internet “techno-elite” have leased-lines to their residences, but it isn’t cheap. The local phone company will charge you a boatload of money to put it in, and another boatload of money per month to keep it up. You or I can’t afford the \$300 to \$1,000 per month average from the phone company. Affordable high-speed access should be priced less than \$100 per month, and preferably in the neighborhood of \$30 to \$70 per month.

Faster, more cost-effective technologies are needed for the rest of us. Cable modems provide part of the answer. Most reports say a good cable modem configuration can provide 500 Kbps or more to a household and certainly Microsoft’s billion dollar investment in Comcast is only going to accelerate deployment (Yes, it is uncomfortable to root for Bill Gates). If the RBOCs quit crying about the horrible overload that dial-up Internet services have placed on telephone switches, and deploy ADSL, then many homes in suburban areas would suddenly have 1.544 to 6 Mbps in no time — yummy and comfortable speed. Rural areas will end up having some combination of wire-

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less and/or satellite technologies available, plus an additional kicker when the local utility company offers to deliver Net access using the same rights-of-way as the electrical power wires are run. Satellite systems in rural areas will be more of the DirecPC flavor. Within three to five years, telecommunications companies should be able to deliver affordable, high-speed Internet access to a large audience.

Fast forward three years. We should be able to deliver quality video to a select portion of the world with a larger portion of the world able to tune in within five years. What then?

WHO KNOWS?

We should have the means to deliver quality video, through the Internet, to a sizeable audience, say anywhere from 1,000 to 10,000 viewers at a time. Ten thousand pairs of eyes on a show — any show — make for a significant number of advertisers, especially when those eyes can be documented and verified in a way broadcast television can only dream about. With some spiffy (and no doubt Orwellian) software logging, these numbers can be expanded into intimately detailed demographics.

At this point, half the convergence freaks are yelling "I told you so," and making plans to trash their analog televisions in five years for one-appliance computer entertainment centers. The other half of the convergence freaks are planning to toss their analog televisions in five years and are wondering if the high-definition TV, which they plan to buy, will have enough built-in smarts to do everything they want for computing and creativity. Skeptics, like myself, are going to keep the old analog broadcast television so we can multi-task between *NYPD Blue* and Word Perfect 5.1 on the tower we bought in '93.

Applications? If you're in the cable business and your video channel is being squeezed out of markets or can't get into a market (Such as E! or Fox 24 Hour News in Manhattan) due to lack of space, then the Internet suddenly becomes a back-door delivery mechanism which doesn't require transponders on satellites, FCC regulation, or trying to beg/cajole cable monopolies to carry your programming.

If you're in the message business, be it political, religious, or advertising, you've got a way to deliver video to the doorsteps of some very educated and well-heeled consumers which you didn't have before. Already, the Republican Party is using RealVideo and the Net to make available the weekly GOP-TV program to their supporters, and is pulling 1,400 viewers a week. You don't even have to buy air time on some funky UHF channel or on a satellite dish — *bang* it's there.

One of the pundits coined the phrase "narrowcasting" to describe the ability to deliver information through the Internet to a specific audience segment, such as the proliferation of ethnically and professionally oriented web sites. Internet audio and video broadcast are the ultimate narrowcasting tool. For example, many public companies are turning to Internet video broadcast to hold "extended audience" stockholders' meetings. Audio and video from the live meeting is made available on the Internet in real-time for shareholders, financial analysts, and the general public which cannot attend due to scheduling conflicts and the like. If you aren't interested in the company, then don't watch. However, if you are interested in the company, then you get a ringside seat to an event which will probably never be carried in its entirety on normal broadcast television, radio, or cable television, since the ratings aren't there

and the company can't afford to buy the air time to broadcast the event.

Narrowcasting, or "selective broadcast," applications are endless. Hearings from the FCC or Capitol Hill? Already being done. Conference speeches from trade shows? Practically old hat by now for the keynote speeches at Comdex, Interop, and Internet World. Symposium presentations from medical conferences? Bring 'em on. Introduction of a new concert tour? No brainer!

However, to generate financial support (i.e. money to pay the bills) for a selective broadcast, there has to be an audience, and the audience has to know the event is available for viewing. Sure, a lot of wanna-be Internet broadcasters have put very cool concerts and speakers online, but the effort doesn't count if nobody is watching.

On the other hand, selective broadcast kicks the teeth out of video delivery over local cable channels. Local cable channel franchises are geographically limited and regulated by the town fathers. For example, a home-brewing show played on public access cable in Prince George's County, Maryland will not be viewed by someone in Alexandria, Virginia because there are two separate cable businesses regulated by two separate local governments. If I'm trying to get advertisers or corporate sponsors for a video project which appeals to a specific audience, such as home brewing, this arrangement really stinks, because I know that home brewers in Alexandria, Virginia are interested in my program.

If I should move this video project for broadcast over the Internet, I suddenly have a much larger pool of people. I don't have the pool of people in Prince George's County, I have a pool of people around the world. More importantly, it is a relatively easy matter to advertise the event/broadcast to that pool of people through a combination of web sites, mailing lists (not spam) Usenet news groups, and even (gulp) push technologies. Usenet news may be the most effective medium given the growth of specific news groups, almost like the proliferation of kudzu in the South.

Internet broadcasting is not the "killer app" to conventional video broadcast television by any means within the next five years. Please mouth the words "legacy system" as you look at your \$300 analog NTSC boob-tube, despite the hype of digital TV. National broadcast-

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ers, with the exception of CBS, have billions and billions of dollars in revenue to protect themselves. They have hedged their bets with Internet broadcast projects. Internet broadcast will likely threaten smaller UHF stations (i.e. the grungy ones you have trouble tuning in now) as well as some of the marginal cable channels which, ironically enough, may survive by migrating to Internet broadcast rather than squabbling with local cable operators for available channel space.

Today, Internet broadcast is already starting to serve as a evolutionary lab for new shows and personalities. Several Internet audio broadcasters have also made the jump from the Net to classic analog radio, mostly to the AM talk show genre. Video broadcasters will use the Net to try out experimental concepts for the soap opera or unproven show hosts. If they're successful, they move to cable or broadcast television. Sound silly? Tell it to Bill Maher, who started *Politically Incorrect* on the Comedy Channel and is now available late night on ABC. As a whole, the broadcast industry has moved from being controlled by a select few — ABC, CBS, NBC — to an industry where there are literally hundreds of choices, between CNN, Fox, independent stations, cable stations, and the various flavors of satellite TV. As DirecTV and other DBS technology gave consumers another TV viewing option, so will a mature Internet broadcast industry.

If it is going to take three to five years for everything to click for high-quality large scale Internet broadcast, why would you want to get started at day zero? Obviously, the first in the pool can get a head start on the rest of the pack, building a customer base and refining procedures for services. Live, real-

time Internet broadcast requires mastery of audio/video techniques, converting audio and video to digital form, Internet connectivity, and operation of distribution servers. Each of the individual technologies has to work right and work right in real-time as each individual event is occurring. If one piece breaks, the show doesn't go on.

MORE IMPORTANTLY, CONTENT

It doesn't take a rocket scientist to know that good content brings people to web sites and keeps people returning to web sites. It also takes time to promote web sites and grow audiences in most cases; the exception being web sites linked to overhyped media events. Since the name of the game is selective broadcast/narrowcast, developing good quality content which can be delivered on good quality Internet broadcast technology (or even good quality content so people will put up with adequate and glitchy Internet broadcast technology) is a win.

Already, various non-traditional broadcasters are working with Internet broadcast to enhance their current web offerings with a multimedia feel. *PC Week* has worked with RealAudio for close to a year and introduced a RealVideo report at PC Expo in New York in June. Similarly, CMP, publishers of *ComputerWorld*, has their poorly-named **first-tv.com** web site loaded with video clips in Vivo format. In the traditional newspaper world, both the *New York Times* and the *San Jose Mercury News* are selectively adding static on-demand audio and video clips to their "traditional" web sites. No doubt, other newspapers will follow and even start to experiment with live broadcasts — no FCC license required.

The start-up costs for Internet broadcast are variable, but if you're already in the ISP business, then it's more than likely that you have most of the skills and some of the tools necessary to start working with technology. ISP-TV, DIGEX's Internet broadcast testbed, spent around \$50,000 in start-up purchases for off-the-shelf audio and video gear, computers, and other accessories. We also invested in some bells and whistles such as a video mixer (\$1,000), and a second DV camera (\$3,500) to have a second camera for mixes and fades. We decided to go with the (then new) digital video three-chip CCD cameras because they were a significant jump in quality over the single-chip \$400 to \$999 Camcorders (and we couldn't afford \$25,000 professional grade cameras which you see the evening news crews carry around). Between the drop in prices on DV cameras and other gear, one could rig up a basic Internet broadcast studio for under \$10,000.

However, you also need to factor in a distribution server to support a couple hundred people and a high-speed connection to the Internet. Without naming specific Internet video software products assume a budget of \$25,000 for some combination of server software, set up time, and a box to run it on.

Once you've got your tools, you need to have something to put on line. This may be your twisted knock-off of *Wayne's World*, a sports show, or the *Star Trek* reviewing society. It could be as simple as live audio broadcasts of local government meetings or some grunge band. Regardless, some content is required, preferably something that is home-grown rather than a commercial production mired in music and video copyright issues. ♦

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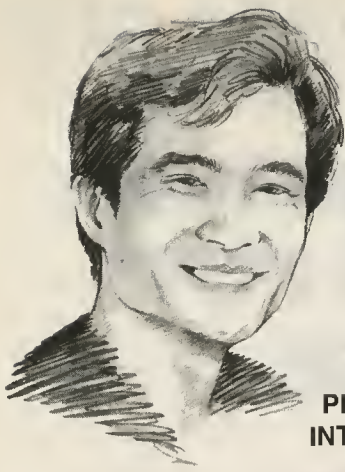
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BIG BOARD BRIEFS by Wallace Wang

ONLINE SERVICES EXPAND INTO ASIA

PRODIGY TO LAUNCH CHINA INTERNET SERVICE

In a country that still controls Internet access to the outside world, China has joined forces with Prodigy to create a special Chinese internal Internet service. Prodigy will work with China to provide Internet service provider (ISP) services and create special subscriber-only China content.

Naturally, the content found on this Chinese internal Internet will be tightly monitored to ensure that it contains nothing deemed unacceptable by the Chinese government. Prodigy plans to provide online shopping and business information, including stock quotes from the Shanghai stock exchange.

The new venture, dubbed *Shanghai Prodigy Telecommunications*, will be 80 percent owned by Prodigy and 20 percent by China North Industries. Prodigy has plans to invest **\$50 million** in the venture over the next three years.

Currently China's main Internet provider is Chinanet, a subsidiary of the Ministry of Post and Telecommunications (MPT). Rather than compete against Chinanet, the new Shanghai Prodigy Telecommunications service will rent transmission capacity from MPT, thereby keeping everyone happy and profitable.

Prodigy is creating a China sales force to push Prodigy Internet accounts at 250 yuan (\$30) per month, compared to Prodigy's flat fee of \$19.95 for online access in the United States. Prodigy hopes to sign up 20,000 to 30,000 subscribers by the end of 1997. Current estimates on the total number of Internet access accounts in China at present range from around 30,000 to 100,000.

COMPUSERVE BRANCHES OUT TO VIETNAM AND SINGAPORE

While Prodigy tackles China, CompuServe has entered into a strategic partnership with the Vietnam Datacommunication Company and High Performance Technology (HIPT) Company to create a CompuServe online service in Vietnam. CompuServe Network Services Vietnam will initially offer its services within the cities of Ha Noi (Hanoi), Ho Chi Minh City (Saigon) and Da Nang.

CompuServe has also signed an agreement with the government of Singapore to provide X.28 dial-up ser-

vices to multinational companies within that country. Just don't forget to pay your Singapore CompuServe bill on time or you might be punished by caning.

AOL, COMPUSERVE, PRODIGY SETTLE U.S. CHARGES

If you canceled a free trial offer to America Online, CompuServe, or Prodigy, and suddenly found the online service tapping into your bank account without your permission, you're not alone. The Federal Trade Commission (FTC) recently voted that America Online CompuServe and Prodigy must get written authorization from consumers before tapping their checking accounts electronically.

While none of the services had to pay fines, the FTC did require America Online to prepare a consumer education program about the use of electronic payment systems. America Online must distribute this information through the Web and 50,000 printed color brochures. Perhaps we should start an additional consumer education program and just warn novices to avoid online services altogether.

COMPUSERVE PLANS NATIONAL MARKETING PUSH

Still without a clue as to how it lost its online service market leadership to upstart America Online, CompuServe now plans to launch a national marketing campaign, targeting high-end consumers. (In other words, people with lots of money but not enough information to realize that a pure Internet account is still more cost-effective than joining CompuServe.)

CompuServe's new direct mail and print advertising campaign is the first since the company halted mass-marketing in the United States last fall and then couldn't figure out why they kept losing subscribers.

The new marketing campaign includes a 2.5 million direct mail drop, focused on business, professional and technical users; an effort to target consumers who ordered CompuServe software but failed to sign up; and a high-end advertising campaign that will probably drain CompuServe's bank accounts one last time before the company declares bankruptcy. Think CompuServe has a chance to survive? Then sign up and support its efforts. Otherwise, watch with amusement as clueless CompuServe slowly sinks into oblivion.

Wallace Wang is the author of *CompuServe For Dummies*, *Visual Basic For Dummies*, *More Visual Basic For Dummies*, *Microsoft Office 97 For Dummies*, and *More Microsoft Office 97 For Dummies*.

When not working with computers, he performs stand-up comedy and has appeared on A&E's *Evening at the Improv* TV comedy show. He can be reached via e-mail at 70334.3672 @compuserve.com, bothecat@aol.com, bo_the_cat@msn.com, or bothecat@prodigy.net

AMERICA ONLINE TESTS US ROBOTICS X2 MODEM TECHNOLOGY

In its on-going rivalry with Rockwell, US Robotics has scored a significant victory by getting America Online to test the new its latest 56 Kbps modems. America Online plans to test the new US Robotics' modems in New York, Washington DC, San Francisco, Chicago and Skokie, Illinois.

America Online invites all members with x2-compliant modems to participate in the tests and provide feedback. As an additional incentive, America Online is offering special x2 access numbers in the above-listed cities, which means if you act now, you may actually be able to dial into America Online on the first try.

COMPUSERVE ADDS FASTER 33.6 Kbps MODEMS

CompuServe has upgraded its worldwide network — all 502 points of presence (POPs) — to support 33.6 Kbps dial-up access. In addition, CompuServe is also field testing both US Robotics' x2 modems along with modems supporting the K56flex protocol, developed by Rockwell International Corporation and Lucent Technologies, Inc.

"We are an active supporter of the development of an industry standard technology similar to the v.34 standard available for the 33.6 Kbps analog modem technology currently deployed," said Peter Van Camp, executive vice president of CompuServe Network Services. "We believe the new 56 K modem technology is an important technology for the future. We will be launching this technology in selected cities, and as demand increases and standards are set, we will roll it out throughout our entire 91-country global network."

Of course, this still doesn't settle which 56 Kbps standard you should use so if you want to play it safe, stick with 33.6 Kbps modems for now. Then get ready to dump that modem in favor of a 56 Kbps modem as soon as CompuServe decides which standard to follow.

AMERICA ONLINE JOINS FORCES WITH THE NEW YORK TIMES

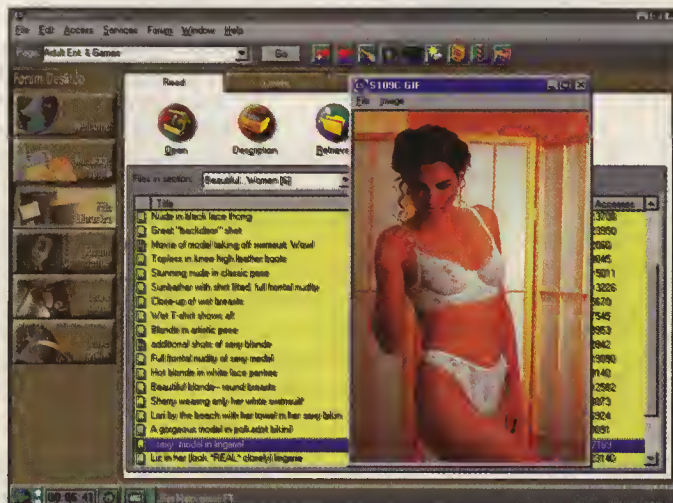


America Online has expanded its partnership with *The New York Times* to provide additional news updates and chat rooms. *The New York Times* area (Keyword: Times), which will be called *The New York Times on America Online*, will continue to provide AOL online access to the newspaper's daily content as well as news updates throughout the day.

Best of all, you can read the Sunday edition of *The New York Times* on America Online without lugging a heavy newspaper around with you. Of course, now all you have to do is lug around a heavy laptop.

FINDING DIRTY PICTURES ON COMPUSERVE

Although CompuServe hasn't been advertising this fact, CompuServe has been quietly expanding its adult-only forums that allows you to download pictures of naked men and women and engage in sexual talk within chat rooms. (Perhaps this is what will help attract new "high-end" consumers back to CompuServe.)



Forum Name	GO Keyword
Adult Entertainment/Game Site	ADULTSITE
Club Chat	KEYCHAT
Erotic Literature Forum	EROTICA
Fantasees	FANTASEES
Fantasy Isle Forum	ISLE
Key Club Images	KEYFORUM
Key Club Videos	KEYVIDEO
Models	MODELFOR
Nudist Forum	NUDIST
Plain Brown Wrapper	WRAPPER
Private Talk Forum	TALK
Starpix Forum	STARPIX
Strippers Forum	STRIPPERS

The above table lists CompuServe's adult-oriented forums. Ostensibly, the forum provides an opportunity for models, photographers, and artists to showcase their work of the human body. As a result, you won't find hard-core pornography here although you'll still find full frontal nudity. If you don't want your child to see naked bodies of complete strangers, then keep them away from this forum.

Like America Online, CompuServe offers a parental control feature (GO CONTROLS) that lets you block access to adult-oriented forums. But since most parents probably don't even know these forums exists (or how to use CompuServe's parental control software), don't be surprised if you find your children eagerly visiting these forums and seeing the types of provocative pictures that you might find in magazines like *Playboy*, *Penthouse*, or the swimsuit edition of *Sports Illustrated*. ♦



PUTTING THE NET TO WORK by Durant Imboden

NETOBJECTS FUSIONS 2.0

I know I'm going to take some flak for this, but I'll say it anyway:

NetObjects Fusion 2.0 has made HTML programmers unnecessary for the vast majority of web sites — including most high-end sites that emphasize graphic design.

Just as desktop-publishing applications like QuarkXPress put traditional typesetters and keyliners out of work, NetObject Fusion 2.0 and its successors will force HTML coders to learn Java, JavaScript, or other marketable skills. In a year or two, the idea of coding a web site in Notepad or even HotDog Pro may seem as quaint as laying out a magazine with an X-Acto knife and hot wax. NetObjects Fusion 2.0 is nothing less than an industry milestone: a Ventura Publisher or FrameMaker for the Web.

A BIT OF HISTORY

In the early days of web design, page authors didn't have any choice but to enter HTML tags manually. Such programming wasn't an onerous chore, because web pages were merely text documents dressed up with hyperlinks and an occasional photo.

By the time Netscape Navigator 2.0 and Internet Explorer 2.0 came along, page designers were wrestling with tables and other goodies. The first generation of HTML editors like HotMetal and HotDog came to the rescue by automating tag insertion, table creation, and other routine tasks.

In 1995, Vermeer (now Microsoft) FrontPage and Adobe PageMill introduced a new approach to web design: creating pages with WYSIWYG authoring tools that behaved like Windows or Macintosh word processors, generating HTML code automatically behind the scenes. FrontPage and PageMill's sister application, SiteMill, also provided a way to manage sites — or at least to manage internal and external links.

FrontPage and PageMill represented major advances in HTML tool design, but they worked more like Microsoft Word than PageMaker or QuarkXPress. They weren't capable of building graphically sophisticated pages with an advertising or magazine look —

at least, not easily. Most high-end web sites were still created the old-fashioned way: by web programmers who translated a graphic designer's ideas into manually coded HTML pages.

When NetObjects Fusion 1.0 began shipping in September 1996, it represented the third generation of editing and authoring software for the Web. But even more important, it offered graphic designers the kind of hands-on control over web design that they were used to having in the advertising and publishing industries.

CLAIMS TO FAME

NetObjects Fusion is billed as "the industry's first smart web site application that integrates automated site building, professional-quality design, and data publishing features." The product encourages the user to develop the site structure first, using an interface that resembles a flow chart. Then, after the site's architecture is laid out, the designer can go to work on adding content to the pages using a WYSIWYG, drag-and-drop interface. Elements can be placed anywhere on the page with "pixel-level control," just as in a desktop-publishing program.

The similarity to DTP doesn't end with the user interface. The program also builds web pages in much the same way as an application like FrameMaker or QuarkXPress creates PostScript files. In other words, the

HTML isn't created on the fly, but is generated when a page or site is previewed, staged, or published.

CREATING A SITE

Instead of discussing NetObject Fusion's interface and features in the abstract, let's take a look at how a graphically challenged web master built an actual site with the Windows NT/95 version of the program. (A Macintosh release is also available.) I was the web master, and the site was a collection of new pages for the Writing Forum on The Microsoft Network.

For starters, I made up a list of pages. I decided to begin with a magazine-style front page titled "Welcome" and add secondary pages for fiction, romance, mystery, SF&F, horror, children's literature, poetry, screenwriting, manuscript showcases, and an articles archive.



Durant Imboden is a freelance writer whose credentials include published novels and nonfiction, fiction editing and staff writing for *Playboy*, travel writing for corporate clients, and representing authors at a New York literary agency. He currently manages the Writing Forum on The Microsoft Network and co-authors the "Flame Wars" column on Delphi, where he is an editorial consultant. Durant maintains a web site for writers at <http://www.writing.org>. MailTo: imboden@writing.org

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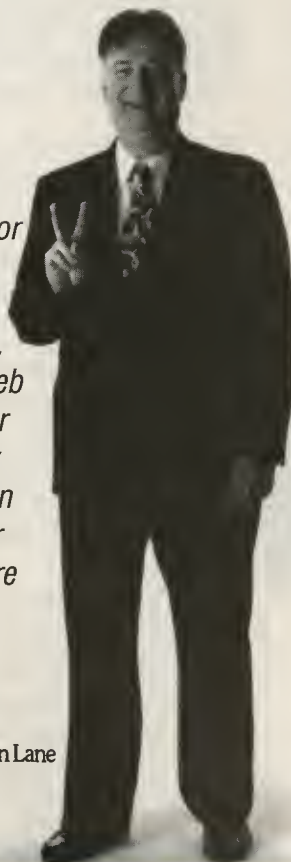
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I then launched NetObjects Fusion and selected "New Site." Instead of using one of the professionally designed templates that come with the program, I began with a blank page.

An icon labeled "Home" appeared on the screen, which was in the default Site View. I highlighted the page's title and changed it to "Welcome," then clicked a "New Page" icon ten times to create "child" pages beneath the Welcome page. Next, I renamed the pages "Fiction," "Romance," etc. to match my list. This entire process took only a minute or two.

With my site's architecture in place, I double-clicked on the "Welcome" page icon. This opened a layout in Page View, along with a tool palette and a tabbed dialogue box for page properties. Using the Properties box, I set the page's dimensions, background, and other attributes. I also chose values for the page grid and checked the "snap to grid" box so that elements would line up neatly during drag-and-drop operations.

By default, NetObjects had created "MasterBorders" with a "Welcome" banner and a collection of navigation links — both buttons and text — to the ten other pages. (MasterBorders are recurring borders, much like headers and footers in a word-processing program, that appear on each page. Any object placed within a MasterBorder will be carried over to the other pages. Left, right, top, and bottom MasterBorders can also be turned into frames by clicking properties icons.)

I decided to junk the default graphics and substitute my own. After deleting everything in the MasterBorders, I clicked on the Picture icon in the tool palette and drew a small rectangle in the top border. A dialogue box popped onto the screen, inviting me to browse for an image file. I selected my

WRITING.GIF file, which immediately appeared in the top border — and in the correct dimensions — on every page.

To help users find their way around the site, I clicked the Navigation Bar tool. Icons appeared for banners and navbars, both vertical and horizontal. I selected the vertical navigation bar and swiped my cursor down the right MasterBorder on the page layout. Presto! Ten navigation buttons were created, each labeled with the correct page name.

It was time to see how my page looked. I clicked the NetObjects Fusion "Preview" button. The program quickly generated HTML pages and displayed them in Internet Explorer, the browser that I'd selected from a "Preferences" dialogue.

I didn't like the navbar's appearance much, so I clicked the "Style" icon at the top of the screen. This shifted my NetObjects Fusion desktop to Style View, which displayed a list of some 50 different styles with illustrations of each style's default banner, primary buttons, secondary buttons, bullets, and text captions. I double-clicked the "Typewriter" style, then double-clicked "Primary Button" and changed the text attributes to red for highlighted captions and black for regular captions.

The next step was to create content for the Welcome page. I used the Picture tool again to insert a GIF file of a cartoon mountain landscape.

After that, I used the Text tool to draw a box for a headline. I typed my headline and changed the font size to +3, whereupon the box expanded to accommodate the larger type.

I drew another text box under the headline and wrote a teaser paragraph for an existing article. Again, the box grew deeper to make room for my text. I then highlighted several words in the paragraph and clicked the "Link" button in the Properties box to create a hyperlink to my article page. After two more images, two more headlines, and two more text paragraphs, my page was nearly done.

But wait! My page was static. It needed an element that would hop, skip, or jump to show the world that I wasn't just another transplanted print guy. Clicking on the palette's NetObject Components tool gave me a choice of rotating pictures, a picture loader for images from external sources, time-based pictures, DynaButtons (buttons that looked "pressed" or display sub-buttons when clicked), a SiteMapper, a message board, an AutoForum to launch a CGI script, and — last but not least — a TickerTape applet. I chose the TickerTape and placed it in the bottom MasterBorder of my page(s), using it to hype my MSN forum's extensive collection of writing-related web links.

From that point on, my job was straightforward: Add images, text, and links to each page until I had a site that was ready to publish via NetObject Fusion's built-in FTP application.

Oops! There was one detail remaining. MSN forum pages require a half dozen lines of standard meta tags, and I needed to insert these on each of my pages. At first I thought I might have to do this manually after the pages were published, but not to worry — clicking a "script" button launched a dialogue box with blanks where I could paste HTML code, JavaScript, or Visual Basic scripts. I chose the "Inside Head Tag" field, and my boilerplate HTML was inserted in the correct location on each of my 11 pages. My site was ready to be staged on my local machine, then published locally or to a remote server — all without leaving NetObjects Fusion.

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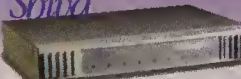
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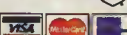
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DIGGING DEEPER

As a novice NetObjects Fusion user, I've only begun to get acquainted with the program's bells, whistles, and tap-dance routines. The package is loaded with nifty features such as:

Site Assets: NetObjects Fusion brings a "project management" approach to web site content. All files and links are managed from a central location, letting the user change a recurring logo, banner, sound, or hyperlink throughout the site with a one-time edit.

Data lists and stacked pages: Pages can be linked to an external ODBC-compliant database for publishing price lists, sports scores, employee address books, event schedules, etc. (Note: This feature shouldn't be confused with active server pages, since updates occur only when the pages are republished as new HTML files.)

Image Maps: Like FrontPage and other modern authoring tools, NetObjects Fusion 2.0 can be used to generate client-side image maps.

Multimedia and add-ons: The program has a "Rich Media" tool for inserting audio files, video files, Java applets, ActiveX controls, ShockWave files, HotSauce site maps, and other third-party goodies.

Forms: NetObjects Fusion 2.0 has tools for designing forms that can be used with the program's own Perl 5 CGI script or third-party CGI scripts. (Note: Unlike Microsoft FrontPage, NetObjects Fusion doesn't require proprietary server extensions for its forms and message boards.)

A VERY FEW NEGATIVES

vNetObjects Fusion 2.0 isn't perfect. For example, it has an annoying habit of expanding the page width when the user inadvertently drags an object too close to the edge. This can be a nuisance when a page is being designed to fit a specific browser width.

Another problem is more philosophical than technical: Because NetObjects Fusion uses elaborate HTML tables and spacer elements to position objects on the page, the resulting code doesn't lend itself to manual editing. Designers and their colleagues must learn to keep their hands off published HTML files, just as they wouldn't mess with a DTP program's PostScript output files.

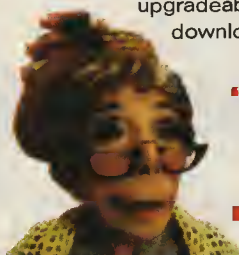
Cost is another issue. The Windows version of NetObjects Fusion 2.0 has a street price of \$475, compared to \$139 or less for its closest rival, Microsoft FrontPage 97. If that's beyond your budget, and you hate writing HTML, you'll want a program like FrontPage or PageMill — or even Microsoft Publisher 97, which does a surprisingly good job of creating graphically attractive web sites at a rock-bottom price.

Finally, NetObjects Fusion 2.0 is a hefty application that works best with a fast processor, a generous amount of RAM, and anywhere from 20 to 80 MB of disk space. If you're currently knocking out HTML code with Notepad on a 486, you're probably not an ideal candidate for this powerful, versatile, expensive, and remarkably easy-to-use program. ♦

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Westcon Debuts "Operation Millennium" — an Aggressive Program to Arm Resellers with the Tools to Compete in the Future.

Eastchester, N.Y., June 23 — Westcon, Inc., the distributor of high-performance networking products, has implemented "Operation Millennium," an enhanced sales-support program. Its primary goal is to further support reseller efforts so that they can remain competitive in today's networking arena and into the next millennium. The program achieves this by helping resellers better serve their customers' routing and switching needs with clearly superior Bay Networks solutions.

"As Bay Networks' leading distributor, we've been saying all along that Bay routers should be considered for any high-priority application. That's especially true of mission-critical functions for ISPs and for financial or governmental institutions, where absolutely no downtime is acceptable," said John Papaioannou, Westcon's vice president for U.S. sales. "In side-by-side comparisons with Cisco routers, Bay Networks becomes the obvious choice because of its ability to create virtual

circuits, its non-proprietary architecture and compliance with industry standards."

Papaioannou further noted that an objective of Operation Millennium is to attract and support Bay Networks resellers. "We expect to add a lot of customers as more and more resellers understand Adaptive Networking, Bay's combination of access, switching, IP services and network management. That's going to be the way to deliver more services with a whole lot less complexity."

Westcon's superior reputation among resellers has been earned on the basis of its value-added services that provide end-to-end solutions, as well as pre- and post-sales support. Routers, for example, are preconfigured and tested prior to shipment.

Operation Millennium strengthens Westcon's support commitment while responding to reseller requests for highly specialized services to address the enormous connectivity impact the Internet is having on networking and corporate intranets. The program further strengthens Westcon's unique position in the marketplace with dedicated full-service support teams. It integrates its highly knowledgeable product managers with technical specialists, which will add even greater value to the full Bay Networks line.

"Our on-line reseller training creates a 'virtual classroom' environment."

— Jenny Pappas

Program components are customized to meet specific client application and budgetary needs, and include a variety of value-added services, such as specialized leasing programs, an Investment Protection Program (IPP) and Westcon's Bay Assurance Program. IPP, for example, enables the user to commit to a Bay Networks solution today and upgrade in the future without penalty by protecting purchases against changing technologies and business needs. Westcon's Bay Assurance Program provides 7X24 Technical Support and next-day product replacement directly from the manufacturer.

Operation Millennium will also extend services via the Internet, such as system configuration and training. Jenny Pappas, Westcon's director of channel development, stated, "Our on-line training is self-paced and includes a weekly, interactive one-hour conference call between resellers and the instructor, creating a virtual classroom environment. This complements our existing, interactive satellite reseller training series, 'Tech TV,' with certification courses on hubs, routers and network management."

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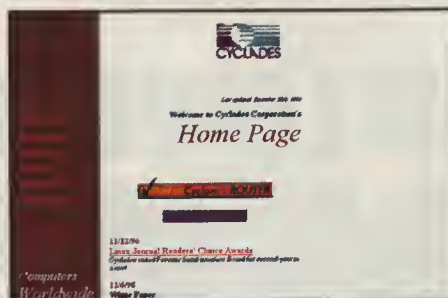
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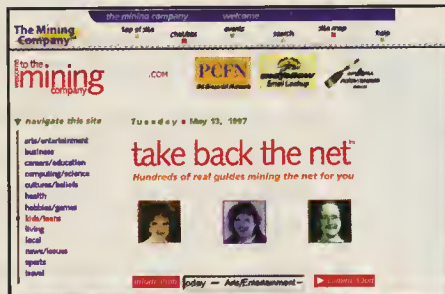
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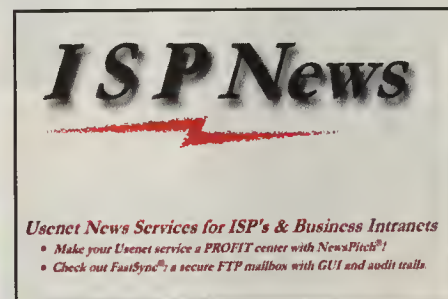
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DVORAK ONLINE by John C. Dvorak

LINKS ON THE WEB THREATENED LICENSE REQUIRED

The attempt to ban linking on the Web — a ludicrous concept considering the fact that the Web was designed for linking — continues unabated. Content providers, publishers, the EFF and vested interests that should know better simply stand by the sidelines, silent.

The two main attacks come from Ticketmaster and the Gang of Six (six publishers) who have made a stink about linking and have taken legal action regarding linking.

The weirdest, and the one most suspicious, comes from Ticketmaster, which sued Microsoft Sidewalk over its linking to Ticketmaster from the Microsoft Seattle "Sidewalk" site. Ticketmaster claims that Sidewalk cheapens its image (somehow) by linking to it. There are two peculiar aspects to this:

- 1.) Sidewalk is actually funneling business to the Ticketmaster site, giving it more income and a higher profile.
- 2.) Paul Allen, at the time of the complaint, owned 55 percent of Ticketmaster. Allen is a co-founder and the second largest stockholder in Microsoft.

Many industry observers, myself included, think that something stinks in Redmond regarding this dispute. Microsoft has been intent on continuing to promote MSN and "exclusive" content and would love to see the World Wide Web simply die and go away so it could get back on the world domination track. It would like to get this linking thing resolved once and for all and what better opportunity than to create this mess between Ticketmaster and its web site.

My concern is that Microsoft would actually like to see Ticketmaster win the case and it would, in fact, "throw" the case like a cheap boxer taking a dive. This would create case law that would favor Microsoft's desire to get into the content business with no worry about people linking to anything it does. No major media has even looked into the Paul Allen connection to this ludicrous complaint.

Then there is the horrid tale of TotalNews and the actions taken by the Gang of Six: Times-Mirror, Time Warner, *Washington Post*, CNN, Dow-Jones, and Reuters. TotalNews is run by a likable guy named Roman Godzich. The site conveniently lists newspapers from around the world with links to each. When linked, the TotalNews site frames the newspaper site

and throws an advertisement into the frame. An obvious thing to do. Any web masters who don't like this happening to their site can blow away the frame or refuse the link. No problem, right? But instead of doing the cheap and obvious, the Gang of Six sued TotalNews. They were obviously in the process of making a legal precedent. Ironically, many of the sites controlled by these giants both link and frame to other sites without "permission."

TotalNews is a small, four man operation running from behind a taco stand in New Mexico and the Gang of Six are lawyer-laden bullies who know how to push around a small fry. In fact, TotalNews couldn't do much more than throw itself on the mercy of the courts or face instant extinction. What a great system we've evolved.

The issue here was supposedly about the fact that TotalNews was framing the other sites. It added advertising to the sites' advertising. This concept was repugnant to a few of the publishers and they sued for copyright violation — which is ludicrous since TotalNews never copied anything. Then these jokers decided that their individual URLs were "copyrighted" and they argued that issue. TotalNews claimed a URL is like a phone number and nothing more. When TotalNews begged the Electronic Frontier Foundation to help, the EFF essentially took a wait-and-see attitude and lamented in a white paper that maybe frames should be banned. Netscape and Microsoft, two companies that use frame technology in their respective browsers, did nothing to help straighten out this mess. Microsoft (see above) may have reasons of its own and Netscape appears to be interested in the content business too, so it was silent.

But everyone knows that this wasn't really about framing. In fact it began with a call from CNN about just plain linking. After the case was over, the Gang of Six made TotalNews sign a dubious "linking license" that allows TotalNews to link to their sites. According to the attorneys, it is revocable at will. It was about links all along, and the court case with TotalNews and the demand of the plaintiffs made it obvious that the case was about links, plain and simple. Framing was just a convenient jumping off point. Don't be surprised if somehow you'll need a "license to link" on your web site someday, thanks to these guys.

While CNN first contacted TotalNews, I believe that Reuters is actually behind this suit and this situation. Reuters is the odd man out and the company with the most to lose. Look at the plaintiffs and who they are:

- 1.) Time-Warner — big dumb media conglomerate

In addition to his weekly syndicated radio call-in show, *Software/Hardtalk*, syndicated newspaper columns, magazine writing for *MacUser*, *PC Computing*, *DEC Professional*, *Information Technology*, and his featured "Inside Track" column in *PC Magazine*, Dvorak is the author of several best-selling books, including *Dvorak's Inside Track to DOS & PC Performance*, *Dvorak's Guide to PC Telecommunications*, and *Dvorak's Inside Track to the Mac*. John can be reached at dvorak@aol.com

with little deep knowledge about the Web. 2.) *Washington Post* — big dumb media conglomerate with little deep knowledge about the Web. 3.) *Times-Mirror* — big dumb media conglomerate with little deep knowledge about the Web. 4.) *Dow-Jones* — big dumb media conglomerate with little deep knowledge about the Web. 5.) *CNN* — big dumb media conglomerate with little deep knowledge about the Web. 6.) *Reuters* — News syndicate which licenses content to web sites.

It doesn't take a genius to see which of these companies actually has something to lose. The first five are simply boneheads for trying to get less links. Nobody can figure out what they are thinking. But *Reuters* will lose sales if you simply link to one of its stories rather than license a story — or the whole service. Fact is, the *Reuters* business model for its web services is just plain stupid, unless, of course, links are banished. Then it becomes visionary.

The situation is not completely resolved and now it looks as if the suspicious *Ticketmaster* vs. *Microsoft* case will determine the future of the Web and linking. Of course, none of this is helped by the fact that the online community and webheads in

particular show no interest in any of this. It's possible that the almost complete lack of coverage of the *TotalNews* story and the shallow coverage of the strange *Ticketmaster* vs. *Microsoft* story is the reason. People seem to only think something is important if it's on the *Nightly News*. Then, while the *EFF* and other organizations, which are supposed to be proactive, sit around with their collective thumbs up their butts, you have to wonder who is on which side of these issues.

In fact, linking is the glory of the Web and it's being threatened in a minuscule way — frames or no frames. This is an affront and a threat to the future of our evolving civilization. It sounds like an exaggeration, but few people would disagree that what has quickly evolved before our very eyes is nothing less than a major worldwide phenomenon of epic proportions. How the same people who realize this can then be so wishy-washy during this crisis is beyond my comprehension. This attempt to ban links is the same as if tuners on TV sets were illegal or if the government required a license to own a printing press. It's a direct threat to communications. It's a humiliation. It's the end of the Web as we know it. The big boys retain control. One more revolution down the drain. ♦

Dvorak's Recipe Nook

Mozzarella Salad

I have a thing for tomatoes. There is nothing as fantastic as a great vine-ripened tomato.

Unfortunately, you have to either grow your own or find someone who grows them. Sometimes a farmer's market will provide a source of good tomatoes and there are some produce centers which try to get you a good tomato too. For the most part it's nearly impossible to get them at a common grocery store.

The problem is tomatoes simply do not store well when ripe. They can't be piled up, for example. Most store tomatoes are bred to be tough, picked green, gassed with a chemical to turn them a pinkish red, and consequently tasteless and funky. You have to buy cherry tomatoes to get any tomato flavor from a typical supermarket. It's pathetic.

As you read this we are at the height of the tomato growing season which usually begins in June and ends during the first rains in October, at least in California. This is the time to eat good tomatoes.

A classic dish in Italian restaurants is the sliced tomatoes with buffalo mozzarella. It's usually neat slices of tomatoes with each slice separated by a thin slice of cheese and maybe a basil leaf. Over the top is drizzled some good olive oil and some balsamic vinegar. The best version I've ever had of this dish was a variation served at the *Bel-Air Hotel* in Beverly Hills, where the vinegar had been thickened to be like a syrup. Amazing little salad.

Here's a variation I developed based on the classic. Kids love this dish since it has a lot of cheese and the cheese gets nicely coated with the dressing, giving it an interesting appeal. I've done this dish numerous times and it's a great success.


Ingredients:

5 or 6 vine ripe medium red tomatoes
1 cup of shredded mozzarella
1/4 cup red wine vinegar
1/4 cup minced basil

1/4 cup of mild olive oil or vegetable oil
1 tablespoon celery salt
pepper to taste



Cut the tomatoes into bite sized chunks. They should be the size of quartered small tomatoes. Add the mozzarella on top, then the basil and salt. Pour the vinegar over the top of this, then add the oil last. Hand toss. Sometimes I like to add bread crumbs or croutons to this salad to soak up any excess dressing. I've also made it incorporating bite-sized chunks of peels and seeded cucumbers. You can substitute dry basil for fresh, but use half as much.

The background of the entire image is a deep, solid blue. In the upper half, there is a dark, silhouetted plant with some yellowish-brown highlights, possibly a flower or a piece of dried vegetation. In the lower half, there is a more detailed, though still somewhat blurred, plant with purple and yellow flowers. The text is centered in the middle of the image, between the two plant elements.

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